

ELEMENTARY GEOGRAPHY

REVISED EDITION

McMURRY
AND
PARKINS



THE MACMILLAN COMPANY

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ELEMENTARY GEOGRAPHY

REVISED EDITION

BY

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AND

A. E. PARKINS

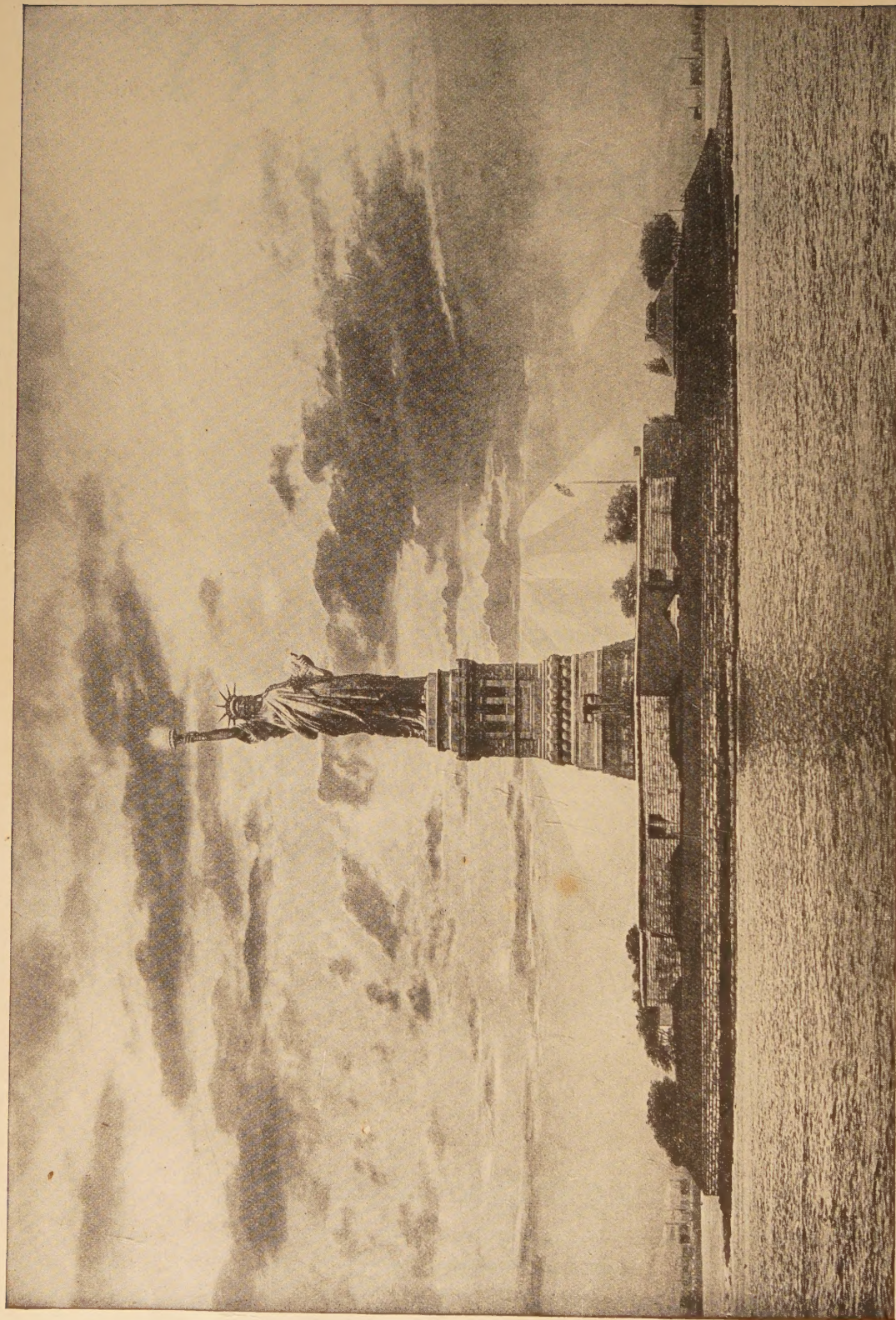
George Peabody College for Teachers

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The Statue of Liberty

This famous statue, a gift from the people of France, stands on a small island in New York harbor.

PREFACE

Elementary geographies have often been the least interesting geography texts placed in the hands of children. If possible, however, the elementary text should be the most interesting, for the permanent attitude of children toward the subject is largely determined by their early study of it.

Importance of the problem method in geography for young children

How can improvement be effected? A simple and attractive style of presentation, much detail about the customs of people, and interesting pictures have all proved helpful; but they are inadequate. Modern education suggests a change in the selection and organization of subject matter that may be as great an aid as these other means combined. That is the centering of the treatment in other things than such topics as location, surface features, climate, etc. These are colorless, so far as young children are concerned; and no treatment organized solely on such a basis can avoid being coldly informational. The proposed substitutes for them are questions or problems within the field of geography that are suggested by the nature and interests of children. In the one case the child is subordinated to the subject; in the other, the subject is subordinated to the child. The two points of view are as wide apart as the poles, and their varying influence in the preparation of a text is constant.

This text has been prepared from the viewpoint of the child's interests. Each section deals with questions that are interesting to young people. The fact that it is so directly based on children's interests and experiences gives more than the customary guarantee that it will prove successful.

Another means for securing greater concreteness has been emphasized. A farm in one section may be typical, in appearance and method of cultivation, of thousands of other farms in the United States. Likewise one great city closely resembles others in general appearance and leading

occupations; and one despotic government is like others that are despotic. General descriptions of these are very likely to be abstract and uninteresting; but a detailed description of an actual example is likely to prove highly interesting, and if it is typical, it can clearly explain a whole class in the most effective way.

The use of type studies in connection with these problems

For these reasons type treatments are numerous in this book. For instance, note how, under the problem organization of subject matter, New York City is presented as a type of great cities (p. 67); how a farm in central Ohio is described at length as a representative of many others (p. 98); and how the old despotic Russian government is given a special amount of space for a similar reason (p. 230). The vividness of mental pictures thus secured may be regarded as one of the chief merits of the text.

Any text that is studied closely has a marked effect on methods of study. Mere lists of facts lead to a more or less thoughtless memorizing. Narrow questions with brief answers have the same effect. On the other hand, a text whose subject matter is organized

Influence of the text on children's methods of study

into units consisting each of the solution of a problem that is worth while leads children to study by such units. The presence of a question that has value to them influences them to exercise judgment in weighing the relative value of details. At the same time their interest in the question causes them to assimilate the data offered, as well as to take some initiative in testing and supplementing those data. Thus the principal elements of good thinking are dependent upon the organization of the facts about live problems; and a text that makes this provision tends daily to impress a model of thinking upon the children.

The importance of this matter in an elementary text in geography is evident, when it is recalled that children's bad habits of study are a constant

cause of complaint above the fifth grade, and that the habits complained of must have been formed in the grades preceding.

The first part of this volume is devoted to an introduction to some of the fundamental conceptions of geography, because actual observations about the soil, rivers, industries, etc., are the sole final basis for the comprehension of such subjects in distant regions. Almost every locality furnishes examples of more than half of all the phenomena that form the subject matter of geography; and a careful study of these, by means of excursions and class discussions, will give a great impetus toward vivid picturing of distant conditions.

The text treats such subjects as are common to most localities; and it is supplemented by the suggestions at the end of each section, many of which suggest additional study of local features. Elementary geography is very lacking unless children are led to form the habit of scouring their home environment in search of geographical material.

The child is not interested, nor is it essential that he should be, in the origin and classification of land forms. The maps should in a simple way show culture in relation to latitude, longitude, and altitude. The physical map is therefore used as the base for the location of countries, states, cities,

railroads, and other works of man. Clearness and simplicity should be the chief characteristic of the maps in an elementary text. This ideal has constantly been kept in mind in the preparation of the maps. Economic maps, such as are abundant in the Advanced Geography, have been introduced sparingly. Their over-use would multiply the difficulties of the elementary text and result in a degree of "spiral" treatment that is no longer sanctioned by progressive courses of study.

The illustrations in an elementary geography should both explain the text and impart some idea of the variety and beauty of the works of Nature and of Man in that vast world of which most children are destined to see but little and to which this book may possibly be their only introduction. Not only, therefore, have the half-tones been selected with exceptional care for their instructional value: only such photographs have been used as could be reproduced faithfully without disfigurement by the artist's brush. Our ideal has been a moderate number of large, vivid photographic reproductions rather than an excessive number of small, diagrammatic cuts.

Acknowledgment is made to Mr. and Mrs. C. Beverley Benson and to Mr. James H. Beach for extensive and valuable help in the preparation of the text, and to Miss Marie Hennes for assistance in the preparation of the Suggestions for Extra Work.

F. M. McMURRY
A. E. PARKINS

THIS REVISED EDITION

In this revised edition every line of the text has been scrutinized and much of it has been rewritten. Greater simplicity has been the chief goal in this task. The subject matter, however, has also been completely rechecked and brought down to date. All numerical statements have been verified and, when necessary, modified to conform to the most recent and reliable data obtainable.

An entirely new world review has been provided (Part VIII).

A new statistical appendix has been provided.

The book has been copiously and analytically indexed.

The book contains entirely new color-map equipment, consisting of thirty-six pages of maps instead of thirty-two as heretofore.

There are four new full-page colored illustrations and many new photographs.

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PART I. WORLD GEOGRAPHY

I. THE GREATEST OCCUPATION IN THE WORLD—FARMING

1. The Importance of the Soil

Everybody has a great many wants. Every girl likes to have a doll, every boy a top and a ball, and all people

Three things that everyone must have

like pictures, story-books, and flowers.

1. Our need for food

Anyone could name dozens of other things that he wants.

Many of these things are not very important; in fact, no one of us would greatly suffer if he had to do without all the things named above. But there is one thing that everyone must have, and that is food. We eat three times each day; and if even one meal is left out, we begin to feel weak. No one can live many days without food.

Probably the two most necessary things in all the world are bread and milk. But there are many others that are only a little less important. Make a list of the ten kinds of food that you think most valuable, and compare it with a list made by some one else. What stores near you sell food? How do they compare in

number with other kinds of stores? In what way does the use of rooms in your house show that food is a very necessary thing for your family?

Although clothing is not so necessary as food, it is still very important. In hot countries less

2. Our need for clothing and shelter

clothing, of course, is worn than where it is cold; but even the savages in the hottest countries wear *some* clothing. The civilized people there dress much as we do, except that the materials used are lighter in color and in weight. In our own country people need many kinds of clothing in summer; and without heavy wraps in winter outdoor work in many places would have to stop. Give examples if you can.

Shelter is, perhaps, as important as clothing. Even in hot countries peo-

ple must have houses of some sort to protect them from the sun and rain. Note the kind shown in Fig. 2. In our country protection against cold is very



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Fig. 1. — In a hot country.
It is easy to find food
and shelter here.



Fig. 2.—Where do you suppose these houses are? Why?

important, and for this purpose the houses must be tightly built. In addition we must have fuel, such as coal or gas or wood, to keep us warm. Thus everybody must have food, clothing, and shelter.

Where are the materials for these three things found? For example, take food first. Bread is made out of flour; flour is made out of wheat; and wheat grows from the soil. Again, milk comes from cows, and the cows produce it by eating grass; but the grass, like the wheat, grows from the soil. Even fish feed on small plants and animals that in turn depend upon the soil. In the same way trace back to its beginning each of the foods in your list of ten kinds. You will find that all of them come from the soil.

Next consider clothing. Many dresses are made of cotton, and we know that cotton grows from the ground. Fig. 3 shows a cotton field. Much clothing is made of wool, which comes from sheep.

But, again, the sheep are able to produce it by eating grass, and thus they depend on the soil to grow it. Linen collars and cuffs and handkerchiefs are made out of flax, which is a farm crop, just as wheat is.

Where does the leather for your shoes come from? Find out, if you do not know. What are ribbons and silk dresses made of, and how is the material produced? Make a list of the different kinds of clothing

that you wear, and trace each back to its beginning. Have you named anything that does not depend upon the soil?

Many kinds of material are used for shelter. In Fig. 4 you see an Indian wig-



Fig. 3.—Picking cotton

wam. Where must the poles have come from that form the frame of the tent? The covering for such wigwams is often made out of the skins of animals. Can you show how the soil has been necessary to produce them?

Look about your home to see where its many parts have come from. Where were the materials for the floors, tables, and chairs produced? Those for the rugs or carpets? Where was the material for the bricks in the chimney found, and the stone for the foundation?

Of all the different materials that you have named for food, clothing, and shelter, how many do not grow from the soil, or depend upon others that grow there? What statement can you make, therefore, about the importance of the soil in supplying materials for food, clothing, and shelter?

So many things come from the soil that a great many persons are employed in raising them. Some of these people are called *gardeners*. Where have you seen gardeners at work? Try to make a list of things that they raise. Others of these people are called *ranchmen*, particularly when they raise many cattle and sheep. Some are called *dairy-men*. What can you tell about their work? But men who till the soil are most commonly called *farmers*, and the pieces of land that they cultivate are called *farms*.

The number
of persons
that work in
the soil

Although cities occupy a large amount of space, it is very small compared with the space occupied by farms. Also, while our cities contain great numbers of people, about as many people live in the country as live in cities. In fact, farming, or *agriculture*, is the greatest occupation in the world.



Fig. 4. — Indian wigwams

©Brown Bros.

Since the soil is so important, it is worth while to learn about it. If you have ever made mud pies, or played in the earth in other ways, you have, perhaps, wondered what the soil is made of. It has not always been earth or mud.

Where the
soil comes
from

1. What it is
made of

You know that the wood in your desk has not always been a part of the desk; it used to be a part of a tree, and has a long story to tell about itself before it was brought to your school. So, also, the soil has a long story to tell about itself. Let us see what this story is.

When mud dries upon your hands, and you rub them together, you can notice an unpleasant, gritty feeling. This is

caused by hard bits of something in the soil that scrape together. If you rub some of this dirt upon a smooth piece of glass, you can perhaps hear it scratch the glass. This shows that these little bits must be very hard; for if they were not, they could not scratch anything so hard as glass. They must be even harder than a pin, for you cannot scratch glass with a pin.

It will help you to find out what these bits are, if you examine some sandy soil. The grains of sand are tiny bits of rock, large enough to be seen clearly. When they are rubbed against glass, they scratch it, because they are very hard and sharp.

Sand is made of rock that has been broken up into fine pieces. It is a kind of soil, but its bits are coarser than those in many other kinds. The soil that you have seen, such as that in the school yard or by the side of the walk or in a flower-pot, was once a part of hard rock.

Soil is made in several ways, which you may learn about later; but most of it is formed by the decay of rock. You know that the stumps of trees and the boards in sidewalks, after a long time, become so soft that they fall to pieces. Perhaps you have called it "rotting," but that means the same as decaying. Fig. 5 shows such a stump.



Fig. 5

Other things, even harder than wood, decay in much the same way, although perhaps more slowly. Bright and shiny nails decay until they become a soft, yellow rust. Tin cans and iron pipes rust until holes appear in them and they leak.

You may not have thought that stones also decay, but they do. The headstones in old graveyards are often so crumbled that the letters can scarcely be read; and sometimes the stones have fallen to pieces. The decay of rock may also be seen in old stone buildings, boulders, and rock cliffs. Have you ever noticed this?

There are several causes for this decay. All rocks have cracks in them (Fig. 6). Usually some of these cracks are so large that they can be plainly seen; but there are

What causes
the decay of
rock



Fig. 6.—Decaying rocks

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many others so small that they cannot be seen without a magnifying glass. When it rains, the water steals into the cracks, and by eating into and rotting the rock, this water very slowly changes it into a powder.

The water may also freeze in the cracks and pry the stone apart. Perhaps you have seen iron pipes or water pitchers that have been burst by water freezing in them. This shows with how much force the freezing water *expands*, or takes up more space; it will even break rocks apart. Some of the pieces of rock broken off in this way are very small, others are large.

Plants help the water to break up the rock. Their hairlike roots push into the cracks and remain there until they grow so large that they pry off pieces of rock.

The earthworms that one often sees on a lawn after a heavy rain also help in crumbling the rock. In order to get food, they take soil into their bodies and bring masses of it to the surface, where it is exposed. The holes they make in the ground also allow water and air to reach the soil and rock beneath.

Rock changes to soil most rapidly near the surface. This is because the rain, plant roots, frost, and earthworms can reach it there most easily. For this reason the deeper you dig into soil that is formed by the decay of rocks, the less you will find the rock changed (Fig. 7); and no matter where you live, if you dig deep enough, you will come to solid rock.

Sometimes men may dig deep wells without finding rock. But in many places there are only a few inches of soil, and in others there is not enough even to hide the rock.

One reason why the soil is deeper in one place than in another is that some kinds of rock decay much more easily than other kinds. Another reason is that in some places the rain washes the bits away as fast as the rocks crumble.

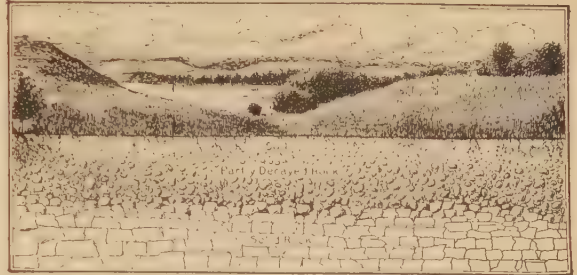


Fig. 7

This may leave the rock quite bare in one place, and make very deep soil in places where the water leaves the broken bits.

Now that we have learned how the soil is made, let us see how plants use it.

An acorn that has been planted in the soil sprouts and sends up a tiny stem. This grows taller and taller, and sends out one branch after another until the little tree becomes a mighty oak. What a lot of material has been used to make such a tree! Where has it all come from?

Some of it has been taken out of the air by the leaves, and some of it has been taken from the soil by the roots. While the stem, branches, and leaves have been growing above ground, the roots have been growing underground, where we cannot see them. These roots have spread out in all directions and have extended deep into the soil, in search of water and earthy foods that are needed by the tree. Dig up a weed in order to see

How soil is of value to plants

1. The work of plant roots

Why solid rock is found beneath the soil

plant roots, frost, and earthworms can reach it there most easily. For this reason the deeper you dig into soil that is

Why the soil is of different depths

places there are only a few inches of soil, and in others there is not enough even to

how its roots have pushed their way through the soil.

Roots have no eyes, to be sure; but they burrow about, and in their own way find what they need. It is not the large or old roots, however, that do this. That is the work of the young roots, many of which are not much larger than hairs.

If you dig up a weed, or any other plant, very carefully, you will see that it has a great many such hairlike roots. It is these that take the materials from the soil, while the older, larger roots merely pass these materials on to the part of the plant above ground. Every tree, every blade of grass, every weed and vegetable, depends upon such tiny roots for its life.

One of the things that roots seek in the soil is water. Plants need water as much

2. What plants take from the soil

a. The meaning of plant food

as you do; and a plant in a flowerpot will soon wither and die if it is given no water.

This is why we water our lawns during dry weather in summer. Roots take other substances from the soil, called *plant food*. This plant food is a part of the soil itself, and is as necessary to plants as food is to you. It is carried, in the sap, to all parts of the plant and used to make stems, leaves, flowers, fruit, and seeds, as the blood in your body is used to make bone and flesh. Every blade of grass and every limb of a tree contains some of this plant food that was once a part of the rocks. When a piece of wood is burned, some of this rock material is left behind in the ashes.

Every person, even, has some plant food in his body; your bones and teeth are partly made of it. But you did not

take it directly from the soil; the plants took it for you, and you received it from them in the flour and other foods that you have eaten.

In some places the soil has plenty of plant food in it. To raise good crops in such soil, men have to do nothing beyond plowing, planting, and hoeing. Soil of this kind, with plenty of plant food in it, is said to be rich, or *fertile*.

b. The difference between fertile and sterile soil

There is also much soil that has little plant food in it; this is said to be poor, or *sterile*. One reason for sterile soil is that the rock from which the soil has come may contain little plant food. On that account one farm may be much more sterile than another next to it.

Soil that was once fertile may become sterile because plants are always taking some of the plant food out of it. They must do this in order to grow. When weeds and trees fall and decay on the spot where they grew, they pay back what they took away. But if plants are carried away from the spot where they grew, there is danger that fertile soil may be made quite sterile.

c. How fertile soil may become sterile

Now this often happens. Farmers send away their wheat to make flour, and take their corn, hay, and oats to market. Indeed, they have to do this in order to make a living. Some farmers have sent their crops away year after year, without putting anything back in the ground to take the place of what was carried away. The result is that the soil has become really worn out, or sterile, and the farmers are no longer able to support themselves and their families by cultivating such land.

The wise farmer takes care to put some plant food back upon the soil, to take the place of what his crops have taken away. Then he can keep on raising good crops.

Plant food which he puts back upon the soil is called *fertilizer*, because it keeps the soil fertile. Fig. 8 shows farmers spreading fertilizer on their land. People who live in cities also often spread fertilizer on their lawns, to feed the grass and thus make it grow.

Millions of dollars are spent in our country every year for fertilizers. If this were not done, the crops would not be nearly so valuable. Then the farmers would suffer; and since we all depend upon the products which they raise, we should all suffer. What is important to the farmer, you see, is important to everyone.

In studying this book it is a good plan to note first the question that is suggested for a section and then read the entire answer without stopping. For example, on p. 1 *Our Need for Food* is the question treated, and the importance of food for everybody is explained on that page. That entire section should be read at one time, to understand more fully what it is all about. Then a second and even a third more careful reading may follow. When this section has been finished, the next one, telling about our need of clothing and shelter, should be studied in the same way.

d. How this danger can be avoided

About how to study

1. Show how important food is for everybody.
2. Compare the importance of clothing and shelter with that of food.
3. Prove that nearly all our food comes from the soil.
4. Show that the same thing is true of our clothing.
5. Is the same thing more or

Review questions



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Fig. 8. — Putting fertilizer on the soil

- less true of the materials for shelter?
6. State some facts about the number of people that work in the soil.
7. What is the soil made of?
8. How has it been made?
9. What causes the decay of rock?
10. Why is solid rock found beneath the soil?
11. Why is the soil of different depths?
12. What use do plants make of the soil?
13. Explain the value of the hairlike roots.
14. What do plants take from the soil?
15. What is the difference between fertile and sterile soil?
16. How may soil be kept fertile?

1. Make a list of crops that some farmer near your home is raising.
2. Make a list of the many kinds of work that you have seen men doing, and find how many on the list have something to do

Suggestions for study at home and out of doors

with food, clothing, and shelter. 3. Find a place where men are digging a ditch or a cellar, and see how the earth looks below the surface. 4. Find a boulder, cliff, or old stone wall that is crumbling away. 5. Collect several different kinds of soil.

6. Find out what trees and vegetables grow best near your home. 7. Visit a greenhouse to find out what kind of soil is used there, and what is done to keep it fertile. 8. Make a drawing of the roots of some weed that has been carefully dug up.

2. The Use of the Soil for Farming

The slope of land has much to do with its value for farming. If it is very level, like a floor, the water after a heavy rain will stand upon it in a thin sheet. This will drown the crops and prove unhealthy for both people and animals.

The kind of land suitable for farming

1. The need of slopes to make good farm land

In fields that have no natural slope, special arrangements are often made to

tile, but it is of little value to the farmer until the water has been drained off.

This is done by digging ditches with sloping bottoms, that allow the water to run away to a lower point. Sometimes such a ditch is left open. More often tiles are laid along the bottom of the ditch, forming a kind of pipe, and then the earth is thrown back. The water finds its way into these pipes and thus dis-

appears. Such drainage is expensive; but the fact that farmers go to such expense shows how very necessary slopes are for farm land.

The kind of slope is an important matter. Land with steep slopes is not well suited

2. The kind of slope wanted

to farming. One reason is that it is difficult to do the work of plowing, planting, and harvesting on a steep hillside. But a more important reason is that the rains wash away much of the soil, often leaving only a rough, thin layer and sometimes even uncover-

ing the rock. The crops, too, are in danger of being washed away by heavy rains.

Land with gentle slopes, like that shown in Fig. 9, is therefore the better kind for



Courtesy of U. S. Dept. of Agriculture

Fig. 9. — A gentle slope is best for farming

carry off the water. Many a farm has such a field — a low, wet place, called a *swamp*. Have you seen one? The soil of such a wet place is generally very fer-

farming. The water runs off from it more slowly without washing away the soil or injuring crops; more of the water soaks into the soil, thus helping the growth of the plants; and the farmer can cultivate the ground more easily.

Land of this sort, with slopes so gentle that it is nearly level or slightly rolling,

is called a *plain*. In a hilly or mountainous country such plains are usually the lowland between the hills or mountains. *Valley* is another name given to such lowlands; but that term really includes the slopes on the two sides as well as the low, level plains between them.

In any small mountain valley one is likely to see a stream winding its way downward through the plain; carefully cultivated farms occupying the more level land and extending some distance up the slopes on both sides; and forests and perhaps fields of snow higher up.

Nearly every valley in the better settled portions of our country has farms in it. Such a valley may not be shut in by mountains or even by high hills; but it is at least shut in by low ridges. Thus there are farms in the Connecticut Valley, in the Ohio Valley, and in the Sacramento Valley. If you are living in a valley, what is its name?

Valleys differ greatly in size. In Fig. 10 you see two rivers flowing into the ocean. On both sides of each is a dotted line running in about the same direction as the river and marked "divide." That means

that water falling on one side of the line flows away in one direction, while that falling on the other side goes in the opposite direction. The rain water is parted or divided along that line, just as it is when it falls on a roof. The *divide* marks the boundary of the valley on one side.

The distance across a valley from one

divide to the other may be no more than a half mile, and the stream finding its way along its lowest part may not be a dozen miles long. Such a valley may be very small and contain no more than a dozen farms. Indeed, many valleys are much smaller than that.

There may be some near your school so narrow that you could toss a stone across them. See if you can find one; and, if so, try to trace its boundaries.

Other valleys are several miles across, and some are far larger. Indeed, there are some so great that one could not travel their whole length even if one were to spend all day and all night upon a fast train. Such valleys are often called *basins*, and include all the land that is drained by a large river. Of course such valleys contain many thousands of farms.

It is interesting to know that the surface of the land is always being changed. People speak of the "everlasting hills," but they are not everlasting. The hills and valleys that you see were not always here, and will not remain forever. They have been slowly made. Let us see some of the ways in which this has been done.

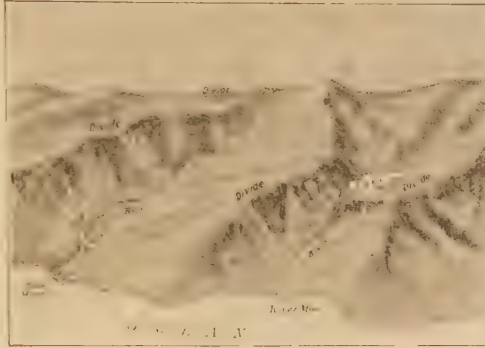


Fig. 10

3. The importance of valleys for farming

4. The number of farms in a valley

5. How the land is always being changed

When it rains slightly, the water soaks into the soil and disappears; but when there is a heavy rain, not all the water can sink into the ground. Some flows away. One little stream, perhaps less than an inch wide, begins at one point; another joins it; soon several of them unite; and after a little while a good-sized brook or creek is formed, which in turn flows into a larger river.

Have you not noticed this flowing water in the school yard, in the roads, or on the sides of hills? If you have, you have surely seen that the water did not flow off without taking something with it. It was muddy. This means that soil had become mixed with the water and was being carried away by it. Every heavy rain carries away soil, cutting little channels, wearing deep ruts in roads, and perhaps even washing out the soil and gravel from under railroad tracks, so that trains cannot run until repairs are made.

During such a rain little channels, or *valleys*, are carved in the soil, leaving tiny *hills* and *ridges* between. No doubt you have seen these formed many times. If not, you can easily make them by pouring water from a sprinkler upon a pile of loose dirt.

There are many heavy rains every year, and in a man's lifetime their number is very large. During many hundreds of years, then, the water washes away an enormous amount of soil and rock. The streams and rivers carry this soil away to the sea. It is in such very simple ways that our valleys have been formed, with the hills between them. It has all been done in much the same way that the rain water cuts the tiny channels in the

soil of the school yard or the sand pile.

While all this has been going on, the land in some regions has been slowly rising or sinking, so as to cause still greater changes. Some of the largest valleys have been caused partly in this way.

How different the surface of the earth must look now from what it did thousands of years ago! No doubt there were hills and valleys in the very beginning; but every year these have been slowly changing, and after many more years they will be very different from what they are now.

1. Explain the importance of slopes for farm land. 2. What kind of slope is wanted? 3. What is meant by *plain* and by *valley*? Why are farms generally located in valleys? 4. Tell about the number of farms that may be found in a single valley. 5. How is the surface of the land always being changed?

Review
questions

1. Find some ground near your home that seems nearly level. In what direction does it really slope? 2. Where is the longest slope in your neighborhood? Would you call it a part of a plain? Why? 3. Find out whether or not there are any swamps near you. If so, tell how you could drain one of them. 4. Why should a farmer use draitiles in a ditch, rather than leave it open? 5. Watch the water carrying off soil after a rain. 6. Show that streets and roads are so built that they, too, have divides. Why is this done? 7. If you live on a farm, find out how your father prevents the rain from washing away valuable soil.

Suggestions
for study at
home and out
of doors

3. Winds and Rainfall, and Their Effect upon Farming

Plants, as we have seen, must have water just as people and animals must have it; without it they soon wither and die. One use of their roots is to find water in the soil. Some plants in dry countries protect themselves from drought by sending their roots down twenty feet or more for moisture.

In the course of a year plants require an enormous amount of water. In most parts of the United States, for example, they cannot thrive with much less than thirty inches of rainfall each year. This means enough rain to make a layer of water thirty inches deep over the land, if all the rain water that fell in a year could be kept from running away. Many

trainloads of water would be needed to cover a single acre with water thirty inches deep.

There is only one place that could supply so much water, and that is the ocean. We can see across most lakes, and steamers cross even the largest in a day or two; but the ocean is far larger. One can sail upon it, in the same direction, for many days without coming to land (Fig. 11). Indeed, the ocean is so large that it surrounds all the land on which people live; no matter in what direction you might travel, if you went far enough, you would come to it.

If your home is not near the ocean, you might have to make a journey of one or two, or even three or four days, to reach



Fig. 11. — The ocean

it. It might be necessary to go up hills and across valleys, to pass around lakes, and possibly even to cross great ranges of mountains. You would be surprised to find how much land there is, and how many farms, villages, towns, and cities



Fig. 12. — A windmill

turn windmills (Fig. 12). They also carry away smoke, dust, and foul air from crowded cities.

Far more important than all such work is their task of carrying water. The air takes up water from the ocean in the form of *vapor*, which we cannot see, and the winds carry it about—sometimes a few miles, sometimes hundreds and even thousands of miles. The winds carry the vapor in all directions, and often hold it for many days before letting it fall.

It requires an enormous amount of water to keep the soil damp, the lakes full, and the rivers flowing; far, far more is needed than all the wagons, boats, and trains in the whole world could haul. But the winds do this work very easily, and much of the time very quietly. Thus it is by the help of the winds that the rocks are made wet and changed to soil, that plants are able to grow, and that animals and people are furnished with water to drink.

What causes the air to move and do such mighty work? Heat has much to do with it. If you watch smoke in a room where there is a lighted lamp, you will see that it moves toward the lamp, and then, being heated, rises above it (Fig. 13). In the same manner the air in a room moves toward a hot stove, and then, being heated, rises above it.

The reason for such movement of the air is, first, that air is made lighter when it is warmed; and second, that the colder air all around, being heavier, crowds in and pushes the warm, lighter air upward. The warm air is forced upward just as a light cork that is sunk in water is forced to the surface by the heavier water all about it.

there are. Find out how long it would take to reach the nearest part of the ocean from your home.

Although there is so much land, there is far more water. In fact, there is nearly three times as much water as land upon the surface of the earth. The ocean is so very large that the great rivers in all parts of the earth pour their waters into it without seeming to make its water any deeper. We can see how fortunate it is that the ocean is so large, when we think what a demand plants make for water, nearly all of which comes from the ocean.

Some of our farms are as much as a thousand miles from the ocean, and it would be an enormous task to supply even one of them with water. How, then, are they all supplied? That is the work of the winds.

3. How the winds carry the water to the land

a. The work of the winds

b. What causes the winds

We know that winds drive sailing vessels through the water, and that they

The movements of the air that surrounds the earth are quite like those of the air of a heated room. If the air is warmed in one place, cool, heavier air pushes in and forces it up. That causes the air to move, first toward the warmer place and then upward. The air moving along on the surface of the earth is called *wind*.

For example, people on the seashore often enjoy a cool sea breeze on hot summer days. This is because the hot sun warms the land more than the water; then the cooler air from over the sea blows in toward this warmer place.

Such differences in the warmth of the air are the main cause of winds everywhere. Winds that blow even hundreds of miles in one direction are caused in much the same way as the very gentle draughts about a lamp or a stove. What wonderful results follow from the fact that there are always some places warmer than others!

Water is always rising from the surface of the ocean. In fact, enough water to fill thousands and thousands of barrels is leaving the ocean every second and floating away in the air; and at all times there is enough water in the air to fill many large lakes. What causes so much water to rise into the air? And why can we not see it there?

You have no doubt watched a kettle of water boil, and have seen that "steam" rises from it. Perhaps you know, too, that if it boils long enough, all the water will boil away, leaving the kettle quite dry. All the water in the kettle has then passed into the air, where it cannot be seen.

c. How the
air is able to
take up water

The reason for this is that heat has changed the water, which is a *liquid*, into a *gas*, which, like air, has no color and cannot be seen. This gas is called *steam*, and is so light that it floats about in the air.



Fig. 13

It is not necessary, however, to boil water in order to make it disappear into the air. All over the earth, wherever there is water, a gas that rises even from water that is not heated is passing off into the air every minute. This invisible gas is called *water vapor*. You can prove for yourself that water is changed into water vapor by noticing that muddy streets and wet clothes soon become dry, even in winter. Or you can place a shallow pan of water on a table and observe, after some days, how much of it has gone.

People say that the water has *evaporated*, which means simply that it has changed to vapor. It is in this way that so vast an amount of water is always rising from the ocean into the air above it.

Perhaps after many days, and after traveling hundreds of miles from the ocean, the air gives back some of its water vapor in the form of rain. What causes it to act in this manner?

d. What causes the winds to drop their water

Have you ever noticed a glass, or a pitcher of ice water, "sweat" on a hot summer day? The water that collects on the outside of a glass of cold water has not leaked through, for there are no holes in the glass. What has really happened is that the air around the cold glass has been cooled by it, and this has caused the vapor in the air to collect in drops on the cold surface (Fig. 14). Drops would gather, or *condense*, just the same on any cold glass, even if no water were in it.



Fig. 14

The window panes of a kitchen are often covered with drops of water from vapor, which rises from the kettles and is condensed in the same way as when you breathe against a cold window pane.

From these facts you see that when air loaded with vapor is cooled, some of the vapor is changed back to water. Heat will cause water to change into vapor, and cold will change it back again.

There are several ways in which winds may be cooled. When air is forced upward in going over a mountain or a highland, it expands as it rises into the rarer air, and in this expansion it is cooled. This proves clearly that mountains are an important help in causing rain. Indeed, the mountains are usually the rainiest parts of any country.

Vapor may also be condensed into clouds and rain when air is forced upward over a plain. This frequently happens in summer when "bad spells" of weather pass eastward over our country. On hot summer days, the warm air near the earth often becomes so light that it is pushed high above the earth, forming huge bil-

lowy clouds. The vapor of these clouds is condensed into raindrops. These are the summer thunder-showers, which often come on hot afternoons. Such days are usually "muggy"; muggy air is warm air with much water vapor in it.

There are several different forms that the vapor in the air takes when it changes to water. For example, when you breathe into the air on a

e. The forms into which vapor is condensed

cold, frosty morning, your breath forms a little cloud, or *fog*. The cold air has made the vapor in your breath change to tiny drops of water, so small that you cannot see a single one, though hundreds of them together make a thin mist. You have, no doubt, seen fogs in valleys, on lakes, or over the ocean. These are always made of tiny drops of water condensed from vapor in the air.

Most *clouds* are also made of tiny fog and mist particles. These particles, as described above, are caused by the cooling of the air. When climbing a mountain one may pass through a cloud, and it then seems to be no more than a fog or a mist. Viewed from below, however, it is seen to be a cloud; and if you go high enough, you may even climb above it. Then,



Fig. 15. — Clouds around a mountain top, seen from above

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looking down on its upper surface, you can see clearly that it is a cloud (Fig. 15).

The *raindrop*, which falls from the clouds, of course is another form of condensed vapor. Raindrops begin as tiny mist or fog particles, but as they grow in size they become so heavy that they can no longer float. They must then fall to the earth.

We have learned that water may be either a liquid or a gas. We know, too, that it may also be a solid, for ice is the solid form of water. When water vapor condenses at a temperature below 32° , or the *freezing point* of water, it becomes a solid. Then either *snow* or *hail* is formed instead of rain. Have you ever examined

the beautiful snow crystals, or *snowflakes* as we call them (Fig. 16)?

Drops of water often collect at night on the cold ground, or grass, and on leaves. This we call *dew*. The dew gathers because the ground and plants cool quickly after the sun sets. These in turn chill the air next to them, until some of the vapor in it changes to liquid water. If the temperature is below the freezing point, *frost* is formed instead of dew.

The farmer watches the winds even more closely than most people do; for the direction from which they blow tells him much about the kind of weather to expect.



Fig. 16. — Snowflakes

f. Meaning of weather records and how to keep one

You would find it interesting to observe this for yourself. If you should keep a record every day of the direction of the wind and the kind of weather it brings, you would soon learn which of your winds cause rain, and which cause fair weather. You may also notice the clouds, and look at the thermometer each day, to see what the temperature is. By this means you can learn something about the weather near your home. A record of this kind, which is called a *weather record*, may be kept somewhat as follows:

Date	Time of Day	Direction of Wind	Kind of Weather	Temperature
March 10	8:00 A.M.	Southeast	Cloudy	55°
March 11	6:00 P.M.	Calm	Rain	60°

In preparing for recitation it is not necessary to try to remember the *exact* words of the book. In fact, it is much better to tell what has been learned in one's own words.

It is a good plan to stop now and then to think over what has been read, and for this purpose some stopping places are better than others. Probably the best place in every page or two is found at the end of the answer to each question that is suggested in the heading at the side of

the page. At this point, one can look back over what one has just read, or think it through without looking at the book. Occasionally one should review several pages at a time.

1. In what ways can you prove that plants need water? 2. Where must the water come from? 3. How does the water reach the land? 4. What causes wind? 5. How is the air able to take up water? 6. What causes the winds to drop their water? 7. Into what forms is vapor condensed? 8. What is meant by a weather record, and how is one kept?

1. What might be the effect if there were much more land and much less ocean? 2. In what direction would you need to go to reach the ocean at the nearest point, and how far would you have to travel? 3. Why does smoke go *up* chimneys? 4. Make a drawing showing how a hot stove causes a movement, or *circulation*, of air in a room. 5. How many examples of evaporation can you observe about you? 6. What examples of the condensing of vapor can you find? 7. What winds usually bring you rain? 8. Where have they probably obtained their vapor?

II. TWO OTHER GREAT OCCUPATIONS — MANUFACTURING AND TRADE

In the cold country far to the north of us live the Eskimos. When they want anything they do not think of going to a store to buy it, for such a thing as a store is unknown to them. They have no money, because they have no use for it; there is nothing that they can buy with it. They have never seen an

automobile or a railroad train or a city; nor do they know anything about post offices or the telephone or the telegraph.

How, then, do they live, and how can they supply their wants? The answer is very simple. Each man makes or finds what he has. If he needs a house, he builds it. If he wants food, he catches

The independence of some people in supplying their wants

1. The independence of the Eskimos

Review questions

Suggestions for extra work

a fish or kills a seal. If he needs clothing, he takes a sealskin and makes it. If he wishes to have a sledge, or a boat, he makes that. Thus he depends upon himself for his food, clothing, and shelter.

Not many hundred years ago there were no stores in our coun-

try. Then, like the Eskimo, every man had to depend largely or wholly upon himself for his food, clothing, and shelter.

Our first white settlers came from Europe, and

made their homes along our

eastern coast because that was the first land they came to after crossing the Atlantic Ocean. Soon people called *pioneers* began to push into the wild country farther west. Often several families settled together, many miles away from other people; but sometimes a family went off alone and made a home ten or fifteen miles from the nearest neighbor. Most of the United States was first settled by such families as these.

Usually the first thing they had to do was to cut down trees in order to make room for a house and garden.

The house was built of logs (Fig. 17), and mud was used to stop up the cracks. The house often had no floor except the earth, and only a single room. The beds were made of posts driven into the ground and joined together with cross-pieces. The chairs were three-legged stools, and the table was part of a log supported upon four legs.

Wheat was raised for bread; and corn, which often took the place of wheat, was made into corn bread. Tea was often made from roots found in the forest, and most of the meat was obtained by shooting wild game.

c. Their food and clothing



Fig. 17. — A pioneer's house

Many families after a time kept sheep, and the wool was made into yarn, blankets, and cloth. If a boy needed a new suit of clothes, his mother wove the cloth, cut it out, and sewed the parts together. Such a suit was called *homespun*. Or if there were no sheep, the clothing was sometimes made out of the skins of animals. Many boys wore trousers made from deerskin, and used moccasins for shoes when they did not go barefoot.

There were no schools, and whatever the children learned from books was generally taught by the mother.

There was little time for reading during the day, and the only light at night was that which came from the burning wood in the great fireplace. Ink was made from some colored root, such as

d. Their schools

brier root, and pens were cut from the quills of fowls. There were few books, however, and there was little time for reading or writing.

As a rule, each man raised more of some things, such as wool, wheat, or hogs,

Each family soon had neighbors. A number of people would build their houses near together, so as to form a little village, and one of them would start a general store. Then the families living some dis-

How people came to depend more upon one another

tance away would come to this center to trade. Here they would sell their farm products and the skins of animals, and buy articles that they could not grow or catch or make.

As the number of people in such a place grew larger, each man did fewer kinds of work. Perhaps one of them built a sawmill, and sawed lumber for the others when they needed it. An-

other spent part of his time at carpentry work for his neighbors. A third built a grist-mill (Fig. 18), and ground grain into flour. A fourth made shoes a part of the time, or served as a doctor, or taught school, along with other work.

A few of the men spent all their time at one kind of work. For example, the blacksmith was kept busy shoeing horses and repairing wagons, while the storekeeper did nothing but buy and sell goods. Now and then the storekeeper would make trips to the nearest city to buy such supplies as he thought his neighbors would require, such as matches, boots, shovels, axes, cloth, and drugs. These he would keep in his store for sale. Sometimes he received money for them, but more often he took eggs, meat, wool, and grain for his pay. These he sent to the nearest large town for sale.



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Fig. 18. — An old-fashioned grist-mill

than his own family needed. There were other articles that he had to buy, such as powder, sugar, salt, and tea.

Sometimes a pioneer stayed at home and bought nothing, or he waited until some trader came along and then exchanged skins for the things that he wanted. Oftener, however, he made a journey, once or twice a year, to the nearest town, which was perhaps a hundred miles distant. He then took with him the extra products of the farm and exchanged them for other articles that he needed.

These trips had to be few, not only on account of the distance, but because the roads were rough and muddy. It might take a pioneer several days to haul a load of grain to town and bring back the things he wanted.

*e. Necessary
journeys*

In this way it was no longer necessary for each farmer himself to go to the distant town or city, for he could usually get what he wanted from the store. He could also sell his products to the storekeeper, and with the money received pay the blacksmith, or doctor, or teacher. Thus each man came to do fewer things for himself, and to depend more and more upon others for many things.

Each year more people came to this country, and the villages grew to be towns and cities, with many mills and factories. Then people in our country began to live more as we now do.

Our dependence upon one another now

That is, not a few men only, but *every* man began to do only one, or, at most, very few kinds of work.

At present some men do nothing but farm; others, nothing but dig coal or iron ore from the mines. Some spend all their time at fishing; others spend it in making cloth, or needles, or shoes. The work that one man does may be of a very simple kind. For example, he may only drive a team, or make screws, or saw shingles, or tie up sacks of flour.

With the money received for such work he buys the many things he wants. These articles have been made by hundreds, perhaps thousands, of other people. Think how many men have had a share in the work of preparing the food that you have on your table each day, or the shoes that you wear, or the house in which you live! How different our ways are from those of the pioneers!

As more people settled in one place, more kinds of work were undertaken; but two of the most common kinds were *manufacturing* and storekeeping or *trade*.

The factories at first were small, employing possibly less than a dozen men. But in many cities there are now factories that employ thousands of workers. Fig. 19 shows such a factory. Can you tell about the kind of manufacturing carried on in some factory near you, and the number of men employed?

How manufacturing and trade have helped to develop cities

The stores, too, were at first small, having only one or two clerks. Many of these also have grown to enormous size and



Courtesy of the Packard Automobile Co.

Fig. 19. — A factory where automobiles are made

employ hundreds of men and women. Our cities have become large chiefly because of manufacturing and trade.

When you are studying your lesson it is important to know that the sentences are not all to be remembered alike,

for they are not all of the same value. Not all the paragraphs are of the same value, nor all the pages. On the contrary, in any book there are always some sentences, paragraphs, and pages that are far more important than others. One of the principal things to do in studying a lesson is to discover what the most important parts are. For example, between pp. 16 and 19 several questions are treated, and the most important one is that on p. 19, telling about *our dependence upon one another now*. In that section, also, there are two sentences that are of special value. One is the statement that "Not a few men only but *every* man began to do only one, or, at most, very few kinds of work." The four sentences making the next paragraph merely illustrate this statement. The first sentence in the next paragraph, beginning with "With the money received for such work," is the most important one there. Those that follow merely explain it. Thus the principal thoughts in this section are contained in these two sentences.

In your study of this book it is best to find the leading question in a number of

pages and the one or two chief statements that are made in answer to each question. It is much more interesting to study in this way, and one remembers better what one reads. Try this plan in your next lesson.

1. In what ways must the Eskimo meet his own wants? 2. Describe the habits of our pioneers in the location of their homes. 3. What kind of houses and furniture did they have? 4. How did they get food and clothing? 5. Describe their schools. 6. Describe the journeys they sometimes had to make. 7. Explain how people came to depend more upon one another. 8. How do we depend upon one another now? 9. How have manufacturing and trade helped to make cities grow?

1. What are some of the attractions that you see in pioneer life like that described in the text? 2. What articles would you expect to find in a general store in a village or in the country? 3. How are department stores in cities like such general stores? 4. Write a story describing an early pioneer's journey to the nearest large town.

III. A FOURTH GREAT OCCUPATION — TRANSPORTATION

There is a fourth great occupation. If you will make a list of the kinds of food you eat, you will find that only a few of them are produced near you. Try it, to see. And some of them may have come a very long distance. The flour for your bread may have come from Minnesota or Kansas or New York; your meat from states still farther west;

your sugar from Cuba; and your salt from Michigan. Likewise the dishes on your table, the knives, forks, and spoons, and even the table itself, with the chairs about it, were probably hauled hundreds of miles before reaching you.

Most of your clothing has come just as far. The cotton of which your dress or shirt is made was probably grown in the South; the wool for your woolen

About how
to study

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questions

Suggestions
for extra
work

The need of
transportation
of goods and
of people

clothing, in Ohio or Montana; and the linen for your handkerchiefs in Ireland.

Building materials and farm crops which are not yet in the form in which people use them, but must be made into food, shelter, or clothing are called *raw materials*. On p. 3 you were asked where some of the raw materials for your home and its furniture were produced. Where did the lumber come from? The coal or oil for heating your house? Were they brought from a long distance?

It is plain that materials for food, clothing, and shelter are being carried in all directions all the time. Nearly every day every farmer is hauling some things to his farm or taking others away. Every factory is receiving raw materials and shipping away finished products. Every store is constantly receiving and sending out supplies. People, too, have to be carried from place to place every day.

The work of hauling, or *transportation* as it is called, is therefore a fourth great occupation. Millions of persons are engaged in it, just as other millions are engaged in farming, manufacturing, and trade.

Newly settled countries usually have very poor roads. Often they are only paths that have been made by animals or men and are hardly more than a foot wide.

The Indians in our country had only narrow paths, or *trails*, for roads. They often used the trails made by buffaloes. Wagons could not be drawn over these, and goods could be carried only on the backs of men or of animals. A number of horses carrying packs formed a *pack train*; these may still be seen in some places (Fig. 20).

The pioneers at first had only trails, and one of their hardest tasks was to cut roads through the dense forests. Trees had to be cut down, stumps and stones removed, steep places leveled, and swampy places filled in. Streams had to be crossed



Fig. 20. — A pack train

by wading, or *fording* them, in places where the water was shallow (Fig. 21). This was often difficult and even dangerous, especially when the streams were swollen after heavy rains. Bridges were built as soon as the people were able to do so.

As long as each man depended largely upon himself for the things that he needed, there was not much hauling, and it made little difference how poor the roads were. But when each person did only one kind of work and relied upon others

Our progress
in road
building

The first kind
of roads

for supplying his wants, good roads or *highways* became important. Our use of auto trucks for hauling many kinds of freight has made good roads still more

year, however, the number of smooth, hard, and level roads is being greatly increased (Fig. 23).

Perhaps you have seen some road-building, and can tell how it is done. One common kind of pavement is called *macadam*, after the name of the Scotchman who invented it. Broken stones several inches deep are pressed down very hard by a heavy steam roller. Then they are covered with gravel and rolled again. Such a pavement is good at first, but it wears out rapidly if the traffic is heavy—that is, if many heavily loaded trucks pass over it. Better and stronger roads are made of *concrete*, or cement, stone, and sand mixed together so



Fig. 21. — Fording a stream

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necessary, for such machines cannot go fast or carry heavy loads on bad roads.

It is not surprising, then, that our highways are rapidly being improved.

as to make a pavement like a long, solid sheet of stone. Asphalt, bricks, and wooden blocks are also used for paving.

Rivers are often useful for carrying



Fig. 22. — Before paving

©Brown Bros.



Fig. 23. — After paving

There are still many wretched ones (Fig. 22) in both city and country; many roads are very rough or steep or muddy. Every

freight and passengers. When the pioneers were settling in the Mississippi Basin they used to float their goods down

the Ohio and the Mississippi rivers to New Orleans

The value of rivers for transportation for sale. In many parts of our country the rivers were at that time the best and almost the only routes of travel and transportation.

A large steamboat can carry as much freight as scores of wagons or railroad cars, and many boats can go up and down a river at the same time. River navigation, or the use of river boats for carrying freight and passengers, is therefore an important kind of transportation. Before railways were common—about the time when your great-grandfathers were boys—boats



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Fig. 24. — A Mississippi River steamer

were used for carrying all sorts of articles. In many backward countries they are still almost the only routes for hauling goods long distances; and even in countries which have many railroads and highways, river steamers (Fig. 24) carry freight more cheaply than trains or trucks.

If we go from the beginning, or *source*, of a river to its lower end, or *mouth*, we shall see that not all of it can be used for navigation.

Difficulties in the way of using rivers for transportation

1. Why the upper part of many rivers is of no use for this purpose

A river may rise, or have its source, in a small spring or in melting snowdrifts in the mountains. At first it is very narrow indeed. We put a toy boat upon the water. For a time it floats along quietly. Then



Fig. 25. — A stream falling over a ledge

it comes to a swift part of the current, called a *rapid*, where it is whirled along roughly and upset. We rescue it and set it right again, but soon it comes to a place where the water falls many feet from the top of a ledge (Fig. 25). In tumbling over this *waterfall* the boat is again upset and dashed against the rocks.

Often the water must rush around or leap over large boulders that lie in its

farms. The current is not so swift now, although there are still some rapids and falls. Instead of rocky cliffs, the banks are low; in some places these are not much higher than the water. Here and there a tributary, itself almost a river, pours its waters into our stream.

It has now been many hours since the water in our stream left the mountains; and it has become so deep that we can drift along easily in a row-boat, watching the men at work in the fields and in the villages we pass (Fig. 26).

At one point, however, the current grows swifter, and finally the water tumbles in a great fall. We must leave the river at this point and pass around the fall. Here is a large city with many mills and factories. From this point on, the stream is so broad and deep that large steamboats can travel upon it; it has now become a great river and is valuable for navigation.

Above this point, however, on account of the shallow water, the swift current, and the rapids and falls, it is of no use for transportation. The upper parts of most rivers have one or more of these difficulties.

There are other difficulties besides falls in the way of transportation on rivers. In time of floods, which are caused by heavy rains or melting snow, rivers often break through their banks and flow over the land. Then farms and villages are destroyed and river vessels



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Fig. 26. — Where a river passes a village

path; and often it falls directly downward for many feet, with a roar. As the water rushes along, beating itself into foam, it is here and there joined by other branches, or *tributaries*, some very small but others nearly as large as the brook itself. Thus the stream gradually grows broader and deeper.

At last the river leaves the mountains and flows in a broad valley through a hilly country. Some of the slopes are steep and covered with forests; other more gentle slopes are cleared of trees and dotted with

2. Difficulties of transportation on the lower parts of rivers

have great difficulty in finding a safe route.

There is another serious difficulty due to the load of mud in river water. Rivers, as you have already learned (p. 10), usually carry quantities of soil taken from the valleys through which they flow. They also grind up rock by rolling stones along the stream bed and carry off the bits of rock in the current. All such loose material is called *sediment*, and the amount of it in any river is generally large. In times of flood it is enormous. Why should there be more sediment at such times than at others?

How much mud rivers may carry is suggested by the amount of land that the rivers build with a small part of it. When the rivers overflow their banks and spread out over the surrounding country, their slowly moving waters drop some of this sediment and form a thin layer of mud. Each flood adds another layer until after many years land is built above the usual level of the river. Such land is generally a level plain; and, since it is made by river floods, it is called a *flood plain*. In the same manner plains are built at the mouths of many rivers. These are called *deltas*, because their shape of a triangle resembles the shape of a Greek letter Δ , called *delta* (Fig. 27). Sometimes such plains are many miles in width.

Much of the river sediment, however, is dropped in unexpected places. As the current shifts about, sand bars may be formed from the sediment, so as to block the old river channel here and there. Then the boats run aground, or lose much time in picking out a safer route. On account of such difficulties, transportation even on the lower parts of rivers is often difficult.



Fig. 27

Fig. 28 represents a river system; that is, a main river and all the smaller streams or tributaries that flow into it.

A large river such as this one may

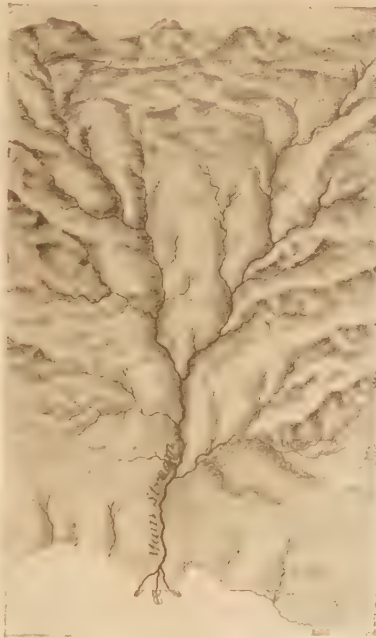


Fig. 28

have dozens of tributaries, bringing together the rain that falls in places even hundreds of miles apart.

Yet while there are many streams, possibly only the lower part of the main one would be of use for transportation. Its upper part and its many tributaries would be too shallow for boats, or their rapids and falls would prevent their use. What difficulties might boats have to meet even at the delta of this river?

How small a part of any river system is valuable for transportation

Although it is only about a hundred years since the first railroads in this country were built, it would be difficult to imagine how we could do without them now. Many of the things we use must be brought a thousand

miles or more by land. Look about in a grocery or hardware store and make a list of articles that have been hauled at least that distance. If there is a factory near you, find how far away some of its products are sent.

Different ways
in which our
freight has
been hauled

Old-fashioned wagon roads could not well be used for such long-distance hauling. Transportation by river is somewhat faster—so much so that before railroads became common, men dug many *canals* so that boats could go where there were no rivers or where falls and rapids made navigation impossible.

Later railroads took the place of our rivers and canals for most kinds of transportation, especially for long-distance hauling. Vast amounts of heavy freight, such as iron ore and coal, are still carried by boat on our rivers and on the Great Lakes (pp. 84-91); but a very large part of our freight is today carried in railroad cars.

In the last twenty years roads have won back part of their old value for long-distance hauling—not the old-fashioned dirt roads, but paved highways on which heavily loaded auto trucks can make long journeys swiftly, perhaps from a factory in one state to a store in another. In some parts of our country trucks have taken away much of the railroads' freight business, and busses much of their passenger business.

Rivers, highways, and railroads generally follow the valleys. Can you explain why the rivers do so? Can you give some examples of highways and railways that keep to the valleys? The reason for this is that the bottoms of valleys usually have a gentle slope,

Why rivers,
roads, and
railways fol-
low the val-
leys

and it is easier to build roads and travel over such land than up and down across hills. Trains cannot be drawn up steep slopes; and therefore the railroads must either cut through the hills or follow the valleys. The latter is much the cheaper plan, so that in a hilly country railroads wind in and out, often making sharp curves in order to keep to the valleys.

In studying a lesson it is best not to spend all your time with your book in hand. After carefully reading the text through two or three times, it is best to select some topic that you think would prove interesting to your mother, or to some of your friends, or that they could tell you more about. Then, at some time when the others present have nothing special to talk about, bring up this topic. Tell what you have read, and ask some questions about it. Talking over a part of a lesson this way is one of the best ways of studying it.

About how
to study

1. Show how great is the need of transportation of goods and people. 2. Describe the roads of early times. 3. What progress have we made in road-building? Tell about the different kinds of pavement. 4. Explain the value of rivers for transportation. 5. Why is the upper part of many rivers of little use for this purpose? 6. What difficulties in the way of transportation are met in the lower parts of rivers? 7. What is a river system? Show why only a small part of any river system is of value for transportation. 8. Why did each kind of freight transportation take the place of the one that was used before it? 9. What is meant by the *source* of a river? *Rapids?* *Tributary?* *Falls?* *Flood plain?* *Delta?*

Review
questions

1. The last part of the names of many towns and cities is *ford*, as, for example, Hartford, Stamford, and Rockford. What does this suggest to you? 2. What is meant by the *right bank* of a river? The *left bank*? River *bed*? River *channel*? River *basin*? 3. Why are the rocks in river beds generally so smooth

Suggestions
for extra
work

and round? 4. Find out some of the ways in which rivers are improved for transportation. 5. Make a collection of pictures of rivers, and state as many facts as you can about them. 6. Make a drawing of a river, showing its source, mouth, tributaries, and flood plains. 7. Why is it sometimes easier to ship freight by auto truck than by railroad?

IV. GOVERNMENT

You have read about the four greatest occupations in the world. But there are many hard-working people who are not engaged in farming, manufacturing, trade, or transportation. Your teacher is an example. Can you give several other examples?

Our need of
laws and
officers

It is plain that there are many other kinds of employment beside these four. One of the most important of the others is *government*. There must be laws about health, the care of streets, the education of children, the raising of taxes, and many other matters; and persons must be chosen to make such laws. These laws must also be enforced, which calls for many more men, such, for example, as policemen, firemen, judges, and a host of others. Thus there are hundreds of thousands of men and women in the United States who give all their time to the work of carrying on our government.

Many of these people have to be elected by vote of the people to the offices they hold. Do you know what is meant by voting and by elections?

How people
are elected to
office

Suppose that all the members of your class, or of your school, wished to form a club, and to choose one of your number

president. How would you go about it? Probably the names of two or three children who seemed best fitted for the place would first be suggested. Then each of you would write the name of the one you preferred upon a slip of paper, and drop it into a box. After that, all the slips, or *votes*, would be counted, and the boy or girl who received the greatest number of votes would be elected.

In such a case you would be voting and having an election at school. When you dropped the name of the one you preferred into the box, you cast a *vote*; and the *election* was nothing more than the choice of some one for the position. Perhaps some of you would become just as much interested in such an election as grown-up people do in their elections.

Men and women hold their elections in much the same way. Ask your father and mother to tell you how they vote.

People hold elections and vote on many sorts of questions, but usually when people vote it is to choose officers to do the work of government.

Matters that
elections
decide

We do not, of course, hold elections to decide how a farmer shall manage his farm, for it is best that he should do that

about as he pleases. He builds fences, plants certain crops, and sells his grain or feeds it to his stock, as seems to him best. So, also, the builder puts up a large or a small house, uses brick or lumber for the walls, and employs as many men

laws about the roads and to do what such laws provide.

The schools, likewise, are not usually owned by any one person, and are of great interest to everybody. So questions about the schools are settled by officers who are chosen at elections.

What shall be done with thieves and disorderly persons? Laws must be made to protect us against such people, and officers must be chosen to do what these laws direct. Policemen and firemen must be employed. A plentiful supply of pure water must be provided. There are many other questions that interest all of us together. Can you name some of them? Ask your father or mother to tell you what will be some of the *public questions*, as such matters are called, that are now interesting the voters of your community.



Fig. 29. — The legislature of Illinois

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as he chooses. In each of these cases what the man does is his own affair.

There are many things, however, that no one person owns, and in which a large number of people are about equally interested. This is true, for instance, of roads. Many people drive or walk over them, but no one person owns them. They are owned and used by the *community*; that is, by everybody who lives near them. The people together have to decide, or vote, where and how roads shall be built and repaired, and who shall do the work. That is, they hold elections in which they choose officers to make

Some of the matters that our elected officers settle concern only those persons who live in a small community, as in a small town or village. For instance, the kind of fire engines that you shall have, and how much shall be paid for them, are questions of no special interest to people in other towns or cities.

Questions that concern the people of single communities

It is also very important that you have a good school building, with good teachers. People living at a distance have little interest in *your* school, but those who live near you are very much interested in it. The people to elect your school officers,

therefore, are those who have a special interest in your school.

Thus there are many matters that are of chief interest to the persons living in one neighborhood. They are called *local* questions, and are voted upon only by the voters in that section. Ask some one to tell you of other local questions.

There are some matters that are of interest to the people in a much larger area. For example, a railway company might charge too much for hauling passengers and freight. In such a case, laws may be needed, forcing them to charge lower rates. Since a railway may be hundreds of miles long, the people of a single town or city could do very little with such a company. In that case it would be necessary for men living perhaps hundreds of miles apart to unite in some way to make laws.

Again, it is important that there be buildings in which blind people may be cared for; others in which the deaf and dumb may be educated; and still others in which insane people may be kept. There must also be strong prisons where criminals may be sent. There are not many such persons in any one small district, and it would prove very expensive and difficult to take proper care of only a few of each kind. Therefore, all the people in a large area, called a *state*, unite to make proper laws and provide buildings and officers for the care of such people. What is the name of your state?

The voters of a state cannot, of course, all come together at one place to discuss such matters. Even if all could make the journey at a time agreed upon, there would be so many that it would not be

possible for all to hear those who spoke, and little business could be done. Besides, some new laws are needed every year, and the voters would have to spend too much time on such work.

For these reasons it is the custom for one man to be elected to *represent*, or take the place of, many others in the making of laws. Where there are great numbers of people, he may represent many thousands, and vote in place of them all. Suppose, for instance, that there are a million persons living in one state, and



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Fig. 30. — The capitol at Springfield in Illinois

that one man is elected to represent every ten thousand. One hundred such men would then be chosen, and it would be their duty to come together and make laws for the whole million.

Since such men are elected to represent others, they are called *representatives*; and

because they *legislate* (which means "make laws"), all these men together are called the *legislature* (Fig. 29).

The city where the legislature meets is called the *capital* (which means "head city") of the state. The capital is often located near the center of the state, and it usually has a fine, large building, called the *state capitol* (Fig. 30). It is here that the representatives hold their meetings.

The chief officer of the state, who is elected to see that the state laws are *enforced* (that is, that the people are made to obey them), is called the *governor*. Who is your governor? He is elected by voters in *all* parts of the state, while each representative is elected by a small section of the state. There are also other state officers, such as judges and a state superintendent of schools. Some of these officers are elected; others are chosen by the governor.

In cities, laws are made through representatives, just as in states, and for the same reasons. The representatives chosen to make the laws in cities are usually called *aldermen*; and the highest officer, who is elected to *execute*, or enforce, the laws is called the *mayor*. All these officers are chosen by the voters at elections. If your home is in a city, learn the name of your mayor and that of the alderman from your neighborhood. Find out what some of their duties are.

The building in which these representatives meet, and in which the mayor has his office, is called the *city hall*. Local questions concerning the city are settled by its own laws and officers, as in any small town. But the city, like any small

town or country district, also is part of the state and elects representatives to the legislature.

In our country there are forty-eight states. There are some questions that no one state can decide alone, because the others are equally interested in them. For instance, it would be hard to trade or to travel if each state made its own kind of money, for each state might then have different coins. In that case, every time a traveler passed from one state to another, he would have to exchange his money for a new kind.

Again, in case of war, the country would be weak if each state acted alone. Perhaps you can give some of the reasons why. Mail is another matter that concerns all the states. There are many others besides. Can you mention some of them?

So it is clear that we need a *United States government* as well as state, city, and town governments. The reason for calling it the United States government is also plain, for the *states* have really joined, or *united*, in order to have one central government for many important matters.

If the people in a single city or state cannot meet in a body to make laws, certainly the people of the entire United States cannot do so. Therefore, representatives are elected and sent to one place from all the states of the Union. Here they consider questions of interest to the whole nation.

The place where they meet is Washington. This city is called the *capital of the United States*, or the *national capital*. At Washington there is a magnificent capitol in which the meetings are held (Fig. 77).

Questions
that concern
the people of
the United
States

How laws are
made and
officers are
chosen for
cities

How laws are
made and
officers chosen
for the United
States

The representatives from the forty-eight states of the Union form what is known as *Congress*. Congress makes laws for the whole country, or *nation*, as the state legislatures do for the states. The members of Congress are called *senators* and *representatives*.

The chief *executive officer* of the United States is called the *President*. He is at the head of our nation, just as the mayor is at the head of a city government and the governor is at the head of a state government. He lives in Washington, and his residence is called the *White House*, since it is white in color (Fig. 31). Who is now President of the United States?

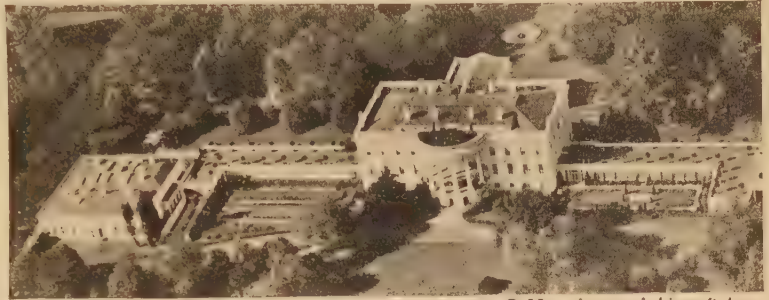
Besides these officers, who are elected by the people, there are a great many others who are appointed by the President to carry on the work of government. Many live in Washington, but some, such as postmasters, live in other places.

Because our people have the power to elect their own lawmakers and thus in a way to make their own laws, our government is called a *democracy*. The first part of this word means "people" and the last part "government," so that the whole word means "government by the people." Because the people do not really make the laws themselves, but elect representatives to do this for them, ours is often called a *representative* government, or a *republic*.

1. Show that the work of government is an important occupation. 2. How are

people elected to office? 3. What kind of questions do elected officers decide? 4. Give examples of questions that are voted upon by small groups of people. 5. Of questions that concern the people of a whole state. 6.

Review
questions



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Fig. 31. — The White House at Washington
This view of the President's home was taken from an airplane.

How are laws made for a whole state, and who are some of the officers elected for the state? 7. How are laws made for cities, and who are some of the officers elected for cities? 8. Give examples of questions that concern the people of the United States. 9. How are laws made, and who are some of the officers chosen, for the United States? 10. Why is our government called a democracy? Why is it also called a republic?

1. Name some officers that you know about, and find out whether they are officers of the local, state, or the national government. 2. What officers look after your school, and how are they chosen? 3. What is the capital of your state, and where is it? 4. In what respect are the town hall, city hall, state capitol, and United States capitol alike in their use? 5. Why should the capital of a state be near the center of the state, if possible? 6. What does U. S. stand for?

Suggestions
for extra
work

V. MAPS

It is often important to represent a country upon a *map*, so as to tell at a glance what its shape is, and where its mountains, rivers, and cities are. Such

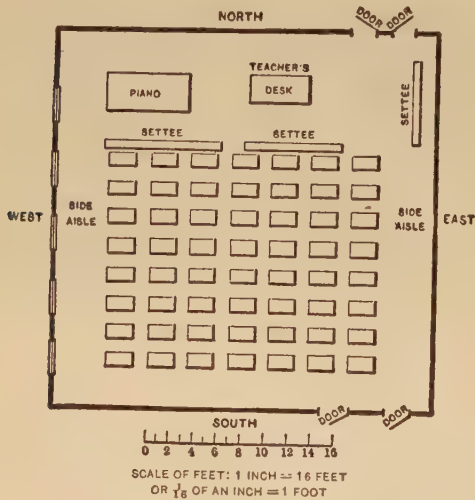


Fig. 32

a drawing can be made of any place, no matter how large or small it may be.

Suppose, for instance, we desire to make a map, or drawing, of a schoolroom.

The room we have chosen is thirty-two feet long and thirty-two feet wide. It would not be easy to find a piece of paper as large as that; but it is not necessary to have so large a piece in order to make the drawing. A small piece will do just as well, if we let one inch on the paper stand for several feet in the room.

In this case let one inch stand for sixteen feet. Since the room is thirty-two feet on each side, the drawing will be just two inches long and two inches wide. To place the desks and aisles properly, we shall need to use a ruler with the inches divided into sixteenths; for one foot in

the room represents one sixteenth of an inch on the ruler.

The ends of the room are on the north and south, and the sides on the east and west. The teacher's desk is three and one half feet in front of the north wall. There is a row of desks about four feet from the west wall. The desks are just two feet long, with eight in a row one and one fourth feet apart. There are seven rows, and the aisles between them are each one and one fourth feet wide. The piano is on the west side of the teacher's desk.

Here is a map of the schoolroom (Fig. 32). Measure each part to see whether it has been drawn correctly, using a foot rule that shows the sixteenth part of an inch. How large is the teacher's desk? The piano?

When a person draws in this way, letting a certain distance on the paper stand for a greater distance, he is said to use a *scale*, or to make a map *according to a scale*. In the schoolroom just described the scale is one inch to sixteen feet.

Meaning of drawing "according to a scale"

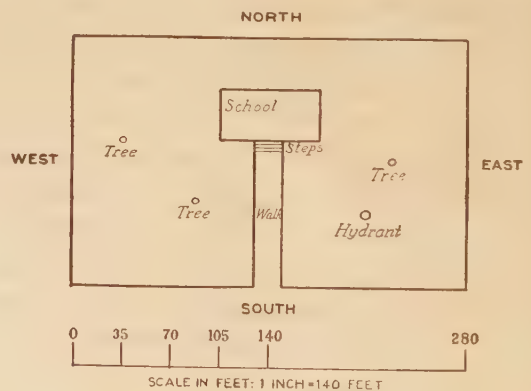


Fig. 33

In the next drawing, that of the school yard (Fig. 33), the number of feet which an inch represents must be still greater,

because the yard is much larger than the room. Here one inch represents 140 feet. According to this scale, find out how large the yard and the school building are. Find how far the trees are from



Fig. 34. — A pocket compass

one another; from the nearest fence; from the nearest part of the building.

All maps are drawn according to a scale, just as these two are. It makes no difference whether they represent a school yard, a state, the United States, or even the entire earth; all are drawn to a scale. Fig. 59 in this book is a map of North America; to what scale is it drawn? Look at some other maps in the book to find out their scales.

Can you not make a map of your own schoolroom? What scale will you use?

Maps that you Put in your own desk, but may draw omit the others. Draw also a map of your school yard. If you prefer to do so, find its size by stepping off, or *pacing*, the distance, making each of your steps about two feet long. Measure the building in the same way. After having finished these two maps, draw a third one. Show on it not only the school yard, but also a few of the streets and houses near by. Let the scale for this third map be one inch for every five hundred steps. How many feet is that?

Maps are used a great deal to show the location of places and the direction of

one place from another. To use them properly, a person must first understand what is meant by *north* (N.), *south* (S.), *east* (E.), and *west* (W.). Probably you already know this.

Ways of finding directions out of doors

One of the easiest ways to find the direction is by a compass (Fig. 34). A compass is a piece of steel, called a *needle*, which swings around easily and, in our country, always points northward or nearly northward. This needle is a *magnet* like the horseshoe magnets that you have seen. It points northward because a force called *magnetism* pulls it in that direction.

Another way to tell direction is by the stars. When the stars are shining, one can tell which direction is north by the help of the Great Dipper (Fig. 35). The two stars on the edge of the Great Dipper



Fig. 35. — The Great Dipper

opposite the handle point toward the North Star. This star, which can easily be found, lies always to the north of us.

One can also find direction with the help of the sun. At noon it stands exactly south of us; and twice each year, about the 21st of March and the 21st of September, it rises exactly in the east and sets exactly in the west. Where does it rise in winter? In summer? When you face the east, which direction is on your right? Which on your left? Answer the same questions when facing the west; the south.

Northeast (N. E.) means between north and east; *southeast* (S. E.), between south and east. What, then, do *northwest* and *southwest* mean?

Point north, east, west, south, southwest, southeast, northeast, northwest. What is the direction from your desk to the teacher's desk? To the desk of one of your schoolmates? To the door? What direction is your home from the schoolhouse? From certain other houses? In what directions do some of the roads or streets where you live extend?

Now let us tell directions on the map. Lay your drawing of the schoolroom upon your desk so that the line representing the north side of the room is on the north side. Also place yourself so that you face directly north as you look at the map. Now north on the map is also north in the room, and the other directions agree with those in the room. In which direction, on the map, is the door from your desk? From the teacher's desk? Place your map of the school yard in the same position, and give the directions.

You see that the north side of this map is the side farthest from you. The east side is on your right, the south side is nearest to you, and the west side is on your left. When a map is lying before us,

the directions on it are usually the same as these.

Of course it is not always convenient to have a map lying flat. This is especially true in the schoolroom, where large maps must be hung up, so that the whole class may see them.

Let us hang up one of these maps, taking particular pains to place it upon the *north wall*. Which direction on the map is north now? You see, of course, that the north side must be the *upper* side, east is on the *right*, south is the *lower* side, and west is on the *left*.

You should drill yourself to understand directions on maps. Give directions from one place to another while the map is hanging up. Put up the map of the school yard, and any others that you may have, and tell the directions from place to place.¹

It is clear now what a map is. It is a drawing telling something about a country, just as a letter may tell in writing what a place is like. When you read such a letter, you think of the place and have some idea of how it looks. So, when you look at a map, you should think about the country it represents, how it looks, and how far apart the places are.

1. How can a map of a schoolroom be drawn? 2. What is meant by drawing "according to a scale?" 3. Review questions
Tell how you have drawn some map of your own. 4. What are some of

¹ *To the Teacher:* After the children are quite at home in using the map when it is hung on the north wall, hang it on the other sides of the room and have them give the directions. This is very easy work if properly graded; but careless work at this point, in regard to directions on the map, often so confuses children that they never fully recover from their confusion. At the proper time, but much later than this, show that toward the top of the map is not always north on maps of large areas. (See Fig. 58.)

the ways of finding directions out of doors? 5. What are the directions on a map?

1. Examine a compass. 2. Find the Great Dipper and the North Star. 3. Show how you can tell directions by your

shadow at noon. 4. If you stood at the north pole, what direction would be on your right? What direction on your left? Answer this question by the use of a globe. 5. Answer the same questions for the south pole.

*Suggestions
for extra work*

VI. GENERAL FACTS ABOUT THE EARTH

1. Form and Size of the Earth

Hundreds of years ago, before America was discovered, men thought that the earth was flat. It certainly *seemed* flat to them, just as it does to us. A few learned men, however,

believed that the earth was a round ball, and that if a person should travel straight on in one direction, he would, in time, return to the place from which he started. You can see how this would be if you push your finger straight around on the outside of an orange until it comes back to the starting point.

At that time men were in the habit of going to a land called India for spices, silks, and jewels. To reach India from Spain they traveled thousands of miles *eastward*. Christopher Columbus was one of the men who believed that the earth was round. So he thought he could reach India just as well by going *westward* across the ocean. He also thought that the distance would be much less. He therefore went to the king of Spain and asked him for ships and men to make the journey.

The king refused the request because the plan seemed foolish, but Queen Isabella came to Columbus' aid. At last, on August 3, 1492, he sailed westward from Spain out into the open Atlantic Ocean



Fig. 36. — The fleet of Columbus

(Fig. 36). Almost everyone thought that he was going on a voyage from which he would never return; but after a journey of several weeks and many adventures, he discovered land on October 12. The land he discovered is one of the Bahama Islands (Fig. 58).

Thinking he had reached India, Columbus called the natives *Indians*. He did not know that a continent and a large ocean still lay between him and India.

After Columbus had returned in safety, other men dared to explore the *New*

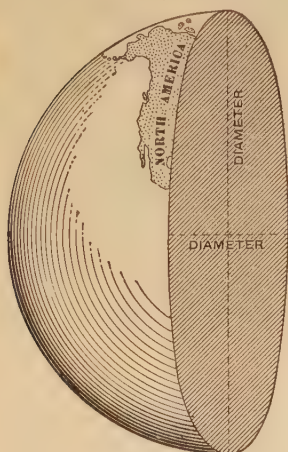


Fig. 37

men went on and completed the voyage. That was in the year 1522, and it was the first time that anyone ever sailed around the earth. Since then many people have made the journey, in both directions, and the earth has been studied so carefully that most people now know that it is round.

The great, round earth is a huge ball, or *sphere*. The reason why it does not appear round to you is that you see so little of it at a time.

If you see very little of an orange, for example, it will not look round. To prove this, place a piece of paper with a small hole in it upon an orange so that none of the surface of the orange is seen, except that which shows through the hole. You will then observe that this part appears to be flat.

If we could get far enough away from the earth to see a large part of it at once,

we could see that it is round (Fig. 46). We see that the moon is round, because we look at it from a great distance.

Our earth is very large; in fact, it is much larger than the moon. A lofty mountain seems to us very high, but even the highest mountains are only a very small part of the great earth; when compared to the whole sphere, they are no larger than a grain of sand compared to an apple. The loftiest mountains are rarely more than three or four miles high, but the *diameter* of the earth (Fig. 37), or the distance from one side to the other through the center, is nearly 8,000 miles.

The distance around the earth, on the outside, called the *circumference*, is about 25,000 miles. This distance, as you see, is a little more than three times the diameter. The circumference of any sphere is always a little more than three times its diameter.

1. What did people formerly think about the shape of the earth? 2. What is its shape? 3. Tell the story of Columbus. 4. Why did he call the savages Indians? 5. Why was the land he discovered called the New World? 6. What makes Magellan's voyage important? 7. Explain why the earth does not appear to us to be a sphere. 8. What is meant by the *diameter* of the earth? By the *circumference*?

Review
questions

1. Trace Columbus' voyage on a globe. Find India on a globe and see how one can go by water from Europe to India by sailing eastward; by sailing westward. 2. Make a sphere in clay. Measure its diameter with a needle, and its circumference with a string.

Suggestions
for extra
work

Why the earth
does not seem
round

2. Daily Motion of the Earth

It does not seem to us that the earth is moving, but the ground on which you stand is really moving faster than any passenger train that you ever saw. The whole earth is turning around like a top. This motion is called its *rotation*. Since the earth turns completely around, or makes one complete rotation, every twenty-four hours, this motion is called its *daily rotation*.

It is this daily rotation that causes day and night. An electric lamp can light only one half of a ball at a time, as you know (Fig. 38). The sun is a kind of lamp for the earth ball, for all the light of our day comes from the sun. The sun, then, can light only one half of the great earth at a time.

Since this is true, you can see that, if our globe stood perfectly still, it would always be day on the side facing the sun, and night on the other side.

Since the earth rotates, the part that is getting the light is always changing. Thus, while the sun is setting for some people, it is rising for others. When it is noon where you live, it is midnight at the point opposite you, on the other side of the earth.

This is why there is a period of daylight and a period of darkness at the place where you live. These two periods together last twenty-four hours, because the earth makes one complete rotation in that time.

The daily rotation also causes sunrise and sunset. Our earth *seems* to be standing still, while each day the sun *seems* to rise in the east, to pass over us, and to set

in the west. Yet we have just seen that the earth is not by any means standing still. Neither does the sun really "rise" or "set." The reason that the sun *seems* to rise in the east is that the earth is always rotating *toward* the east. We first get the light of the sun from that direction because the earth is turning toward that direction. The sun seems to set in the west because, as the earth continues to rotate, we see the sun last in the west.

Although men speak of the sun *rising* in the east and *setting* in the west, they really know better. They express their thoughts in that way simply because it is the easiest way. It would be difficult to think of any better way. Can you?



Fig. 38

Hundreds of years ago, however, all people thought that the sun really rose, and that after moving across the sky, it really set in the west. Our use of the words *sunrise* and *sunset* has come down to us from that time.

Since the earth is rotating with so great speed, why can we not notice it? The answer is simple. Everything on the earth is moving with it, including ourselves. We therefore do not rush past other objects as we do on a moving train; yet the only way of seeing that we are moving would be to observe that we were passing the objects about us.

Why are we not all hurled away from the earth? When we let go of a string by

Why rotation does not hurl us away which a stone is being whirled around, the stone flies away. Why, then, do not we and other objects, such as the water in the ocean, fly away into space?

The reason is that the earth draws everything toward it, and holds it there. If you push a book from your desk, it falls to the floor; and when you spring upward into the air you quickly return to the ground. All objects are drawn downward because the earth is pulling upon them. This force, which draws all objects to the earth, is called *gravity*. Do you see how very important it is?

You have perhaps watched a wheel spin about on a rod or pin, the rod or pin holding it in place and carrying its weight. The earth spins around in much the same way; but no rod is necessary to hold it in place. What a mighty rod it would have to be, if there were one! A spinning top does not turn around a

rod, either. It turns around a line running through its center, which is called its *axis*. The earth also *rotates around its axis*.

The axis of the earth is really nothing that you can see. It can be represented, however, by a straight line that runs through the center of the earth and extends to the surface in both directions (Fig. 39). The two ends of this imaginary line are called the *poles*. One end of the axis is the *north pole*, and the other the *south pole*.

You can understand this better by running a long, slender stick, or needle, through the center of an apple. The stick represents the earth's axis, and the places where its two ends appear at the surface of the apple represent the two poles of the earth. You can then spin the apple very much as the earth spins around on the line called its axis (Fig. 38).

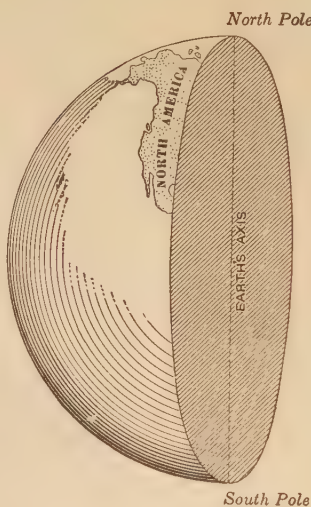


Fig. 39

If you were to go far northward from the place where you live, you would pass through the land of the Eskimos; and if you could go on, you would, in time, come to the north pole. Or, if you should go south, and went far enough, you would come to the south pole.

Many men have tried to cross the icy seas that surround the north pole (Fig. 40); but, until 1909, no one had been able to get quite so far as the pole. In that year Admiral Peary, after many trials, at last reached the north pole; and Captain Amundsen reached the south pole in 1911.

Meaning of axis and poles of the earth

Of course, Commander Peary did not find anything at the north pole to mark the place. He was able to tell that he was there by the position of the sun. If he had been there during the night, he would have found the *North Star*, toward which the earth's axis points, almost directly over his head.

Midway between the poles we think of another line, drawn around the earth on the outside (Fig. 41). This is called the *equator*, because all parts of it are equally distant from each of the poles. The distance around the earth was given on p. 36. What, then, is the length of the equator?

Meaning of
equator

As the earth turns on its axis, all points on the surface must go with it, just as every part of the skin of an apple turns with the apple. Since the earth makes one complete turn each day, a man at the equator travels 25,000 miles in twenty-four hours. This is at the rate of over 1,000 miles an hour, while the fastest trains travel little more than sixty miles an hour!

1. Tell about the daily motion of the earth. What is this motion called? 2. How does this motion cause day and night? 3. How does it cause sunrise and

sunset? 4. Why can we not see that the earth is rotating? 5. Why is not every loose object hurled from the earth by this rapid motion?

Review
questions

6. What is meant by the axis of the earth? By the poles? 7. Point toward



Fig. 40. — Traveling near the north pole

each of the poles. 8. What is meant by the equator? How long is it?

1. Locate the poles on a rotating ball or sphere; and also represent the equator. 2. Use a horseshoe magnet to see how it attracts iron. 3. With a globe or an apple and an electric light, show how it is day on one side of the earth while it is night on the other side. Show also why the sun appears to rise in the east. 4. Where did people, long ago, suppose that the sun went at night?

Suggestions
for extra
work

3. The Zones and the Hemispheres

The hottest part of the earth is near the equator. The reason for this is that the sun, at midday, is directly over the heads of the people who live in that region. You know that the sun's rays feel warmer at noon than in the early evening, because the sun is more nearly overhead at noon. At the equator,

Why there is
a hot belt
around the
central part
of the earth

however, and for many miles to the north and south of it, the sun is high at midday both in summer and winter. Thus there is a wide belt, extending all the way around the earth, that never has any winter; it is warm every day in the year, as it is in summer where we live.

The northern edge, or *boundary*, of this hot belt is called the *tropic of Cancer*

(Fig. 41); it is a line about 1,500 miles north of the equator. The southern boundary, which is about 1,500 miles south of the equator, is called the *tropic of Capricorn*. Everywhere between these two lines, or *tropics*, the sun is straight overhead at some time during a part of the year; and it is never very far from overhead at noon.

Point out these two lines on Fig. 41.

About how many miles wide is this belt? Over all this vast region the weather is hot, or *torrid*, except in very high places; and for this reason it is called the *torrid zone*. It is also called the *tropical zone*, because it lies between the two tropics.

It makes a great difference on the earth whether the sun is nearly overhead or not. For example, the warm weather during

Effects of the heat on life there

1. Its effects on plant life

every day of the year in the tropics makes the plant life very different from ours. In sections where there is much rain, plants grow very rapidly. You have, perhaps, noticed how grass and other plants thrive in warm, damp weather. Where there is such weather all the time, plants grow in great numbers and very rapidly. Many kinds of trees are found in the forests, and the vines, trees, and other plants grow in what is called a *jungle*, so close together that one cannot get through them without cutting a path.

The negroes of Central Africa live in the tropics, and the effects of the heat upon them are seen in many ways. For example, they do

2. Its effects on the people

not have to work so hard as we do to get food. Fruits can often be picked from the trees and bushes. If vegetables like those that we have, such as beans, potatoes, and corn are wanted, they can be made to grow very easily, several crops in a single year. The need of clothing makes little

trouble, partly because not much of it is wanted. Fig. 42 shows how little may be worn. Sometimes skins of animals are used; but a common material is cloth made from the bark and fiber of trees and other plants that grow there.

Shelter, likewise, is easily provided. Sometimes the people live in trees, or in caves, as the Swiss Family Robinson

lived for a time. Sometimes they stick branches of trees into the ground in the form of a circle, fasten the upper ends together, and then cover the sides and top with such materials as brush, mud, grass, and straw (Fig. 42). Their huts are always very simple; they usually have no windows, and are only one story high. A savage negro, when he first saw one of our houses, cried out, "This is not a hut; it is a mountain with many caves in it!" You can see that such people do not have to work hard for food, clothing, or shelter.

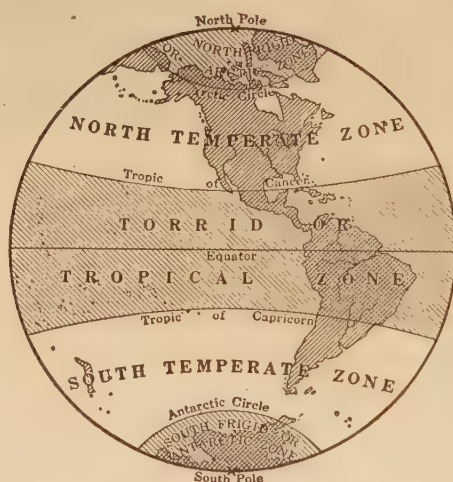


Fig. 41

North of the torrid zone the sun, even at noon, never stands directly overhead;

and the greater the distance from the equator, the greater is the slant at which the sun's rays shine upon the earth.

Our country is north of the torrid zone. Here at noon you always find your shadow pointing north; for the sun is south of you. Notice the length of your shadow at midday, and the position of the sun, in summer and in winter.

South of the torrid zone, also, the sun never stands directly overhead. But the people living there find their shadows pointing south at noon, because the sun is north of them.

Since the sun's rays strike the earth at a slant in both of these belts, it is cooler in them than in the torrid zone, especially in the winter when the sun's rays are most slanting.

There is a belt, then, on each side of the broad torrid zone, where it is sometimes warm and sometimes cold. The climate there is called *temperate*. The belt north of the torrid zone is called the *north temperate zone*.

It extends around the earth all the way from the tropic of Cancer to the *Arctic circle* (Fig. 41). How much of the United States lies within this zone (Fig. 46)?

The belt south of the torrid zone is called the *south temperate zone*, as you might expect. It extends around the

earth from the tropic of Capricorn to the *Antarctic circle*.

Near the poles the rays of the sun reach the earth at a still greater slant, much as they do with us early in the morning or late in the afternoon. Even in the middle of the day the sun lies low



Fig. 42. — Building a hut in the tropical zone

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in the sky, and the shadows are very long. Therefore, the climate there is very cold, or *frigid*; the ground thaws out only at the surface, and only during the short summers; and the ice never entirely disappears from the ocean (Fig. 40). Indeed, right at the poles there is no summer at all, just as there is no winter at the equator.

Why there are two cold zones, and their names

The two regions around the poles are called the *frigid zones*. That about the north pole is called the *north frigid zone*, the other the *south frigid zone*. Since they surround the poles, they are also sometimes called the *polar zones*. The seashore along the Arctic Ocean is the home of the Eskimos. But no people live

The names of these cooler belts, and their boundaries

in the south frigid zone, where there is an ice-covered continent as large as Australia (Fig. 46).

At the Arctic and Antarctic circles, the sun rises just at noon on the shortest

parts of our country. In the frigid zones the snowfall is not very heavy. The summers are short, but so warm that the snow and ice melt away on the lowlands, the grass is green, and wild flowers bloom.

On the ocean near the north pole, however, there is floating ice the year round.

There are no forests in the land of the Eskimos, and about the

2. The lack of wood

the people have is that which floats down the rivers that rise in the forested regions to the south. This wood may be carried by winds and currents along the coast for scores and even hundreds of miles, and is therefore

3. The plants of the North

called *driftwood*. There are hundreds of different kinds of flowering plants and many kinds of moss and grass, but there are few plants that furnish food. In some regions berries are plentiful in late summer, but these are rarely eaten. Of course, grains and vegetables, like those we grow, are

not raised, because the ground is too cold and the summer season would be too short for them to grow. Hardly any of the food of the Eskimos is secured from plants.

The people live on meat and fish. Game is very plentiful and easily obtained. Large areas are covered only with moss, but meadows of rich grass furnish food for great herds of caribou. In single herds

4. Game and fish

a. What the Eskimos eat



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Fig. 43. — Eskimos in northern Greenland

This is their summer home. In winter what kind may be used (Fig. 45)? These people frequently trade with the whites.

day, and sets at once. On these circles it does not set at all on the longest day. In Eskimo land there are whole weeks of winter days without sunlight and summer nights with sunshine.

Effects of the cold on life in the north frigid zone

1. Comparison with our climate

The winters are much longer than ours in the frigid zones, although it never gets much colder than the coldest winter weather in some

there are often thousands of caribou. In some places there are also musk oxen, reindeer, bears, wolves, foxes, rabbits, and game birds. Fresh-water fish are caught for food. In the ocean also seals are caught in great numbers, besides some walruses and a plentiful supply of fish.

The caribou is hunted mostly in summer and early fall. Some of the meat is dried for winter use. In the summer fish of many kinds are speared near the mouths of the rivers; in the winter they are speared or hooked through holes in the ice. The season for seal fishing is mainly in the winter and early spring. Seals are usually caught through the ice. The seal does not have gills as do fish; hence it must come above water to breathe. When the sea is frozen over, it gnaws *breathing holes* through the ice. At these holes it is killed with a *harpoon*, or spear, tied to a rope which the Eskimo holds after he has thrown it.

The flesh of the seal is excellent food. Just beneath the skin is a layer of fat, or *blubber*, that is burned for heat and light. The flesh and skins are used for food and clothing. In making useful things out of bones, horns, tusks, and

skins the Eskimos show great skill. The Eskimos need the warmest kind of clothing in the winter (Fig. 44). Boots, clothing, and caps are made of fur. Skins are stretched over frames of bone or wood to make the *kayaks*, or canoes. These canoes keep afloat in very rough water and are so light that one man can carry them.

Some Eskimo houses are made of driftwood, or of stone and sod.

In summer, however, most Eskimos live in tents made of skins (Fig. 43). These are easily taken down and carried about. In winter

many Eskimos build houses made of snow. It takes only an hour or two to build such a house as you see in Fig. 45. This is made of blocks of snow piled one



Fig. 44. — An Eskimo and his sled



Fig. 45. — A snow hut

upon another until it is so high that a man can stand upright within. Sometimes a tunnel, through which people have to crawl, is built in front of the

b. How they
get their food

6. The Eskimos' houses

5. Eskimos' clothing and tools



Fig. 46



Fig. 46

entrance to keep out the cold winds. A block of snow is often used for a door, and a thin slab of ice for a window. Inside, when the seal-oil lamp is burning, it is cozy and warm. Little furniture can be used. Low banks of snow covered with two or three thicknesses of fur serve as beds. There are no chairs. The floor, except where cooking is done, is also covered with fur robes.

The Eskimos have a better time than you might suppose. In the light season (p. 42) food has to be stored up for the dark season. In the dark season the Eskimos cannot do much hunting, but they often travel many miles to visit their friends and dance and sing. In some years food is scarce, but families that have plenty share with families that have little.

On pp. 40 to 46 you have read about the tropical zone, the frigid zones, and the temperate zones; and you have learned a little about the food, the clothing, and the shelter of the people in each zone. In which of these zones would you prefer to live?

Since the equator is midway between the poles, it divides the earth, or sphere, into two equal parts, called *hemispheres* (*hemi* means half). The half of the earth north of the equator is called the *northern hemisphere*, that south of it the *southern hemisphere*. In which of these is the United States?

The earth may also be divided into halves by a circle running north and south through both poles. The western half, in which the New World lies, is called the *western hemisphere*. The eastern half, or the Old World, is called the *eastern*

hemisphere. You will find these two hemispheres represented in Fig. 46.

Although on such a flat map as Fig. 46 these two hemispheres seem to touch each other only where the pages come together, they are really the halves of a sphere and their edges touch each other all the way around. Look at a globe to see for yourself that this is true.

1. Why is there a hot belt around the central part of the earth? 2. Give the names of the circles at the edges, or *boundaries*, of this belt, and give its name. 3. State the effects of the heat there on plant life. 4. Its effects on the people. 5. Why are there cooler belts north and south of the torrid zone? 6. Give the names of these cooler belts and their boundaries. 7. Why are there two cold zones, and what are their names? 8. State the effects of the cold on plants and animals there. 9. Its effects on the food and clothing of the people. 10. Its effects on their plans for shelter. 11. What is meant by hemispheres? What is meant by the northern hemisphere? By the southern hemisphere? By the eastern and western hemispheres?

1. Tell a story about the different kinds of clothing you would need in each zone in going from the north pole to the south pole. 2. In passing southward on such a journey from the north pole to the south pole, in what different directions would you look at noon to see the sun? In what direction would your shadow point? 3. Have your teacher read to you about Kak, the Eskimo boy, in a book called *Kak, the Copper Eskimo*, by Stefansson and Irwin.

7. How the Eskimos enjoy life

Review questions

Suggestions for extra work

4. Latitude and Longitude

If we learn that a certain place is in the torrid zone, or in one of the other zones, we know something about its location; yet we do not know very much about it, because each zone is so large.

To help locate places more exactly, other circles than those already mentioned are used upon maps and globes. Some of these circles extend east and west, on each side of the equator, as you can see in Fig. 46. The distance between them is measured, not by miles, but by *degrees*, each of which is equal to about seventy miles. How many degrees are there from one of these circles to the next in Fig. 46? About how many miles is that? We can thus quickly learn how far any place on or near one of these circles is from the equator. For example, how far north of the equator is New York City (Fig. 59)? Chicago?

Instead, however, of saying that a place is a certain number of degrees north or south of the equator, we say that it is in so many degrees *north* or *south latitude*. Latitude means simply the distance north or south of the

How places are located in a north and south direction on the earth

Meaning of latitude

equator. Places north of the equator are in *north latitude*, and those south of it, in *south latitude*. The circles running east and west, which are drawn to show the latitude of places, are called *parallels of latitude*. With their help, find the latitude of New Orleans; of Boston (Fig. 59).

Other circles, extending north and south from pole to pole, help to locate places in an east and west direction. A line that extends through England is agreed upon as the starting point in measuring. Places east of this line are said to be in so many degrees *east longitude*; places west of it, in so many degrees *west longitude*.

How places are located in an east and west direction

Longitude, as you see, means simply the distance east or west of this principal line; and these circles are called *meridians*. In what longitude is New York City (Fig. 59)? Chicago?

Meaning of longitude

1. How are places located in a north and south direction on the earth?
2. State the meaning of the word *latitude*.
3. How are places located in an east and west direction?
4. What is meant by *longitude*?

Review questions

5. The Continents and the Oceans

The left half of Fig. 46 shows how our half of the earth looks, the New World that Columbus discovered. The many little dots that you see represent islands; but there are two masses of land so large that they are called *continents*. Find their names, if you do not already

The continents of the New World, and their shape

know them. Perhaps you can point to the part of North America in which you live.

Notice the form of our continent. It is broad in the north, but tapers almost to a point where it joins South America, so that it forms a rough triangle. South America is very similar to it in form.

Draw its outline by using only three straight lines.

You have learned that there is about three times as much water upon the surface of the earth as land; but very much more than three fourths of the western

earth. Give their names. There is a fifth one, called the Indian Ocean. What continents nearly surround it?

Fig. 315 is a different kind of map, showing all the continents and oceans together. Name the continents shown there, and point out each. Name the oceans, and point out each. Which ocean would one cross in going from the United States to Europe? From the United States to Asia? Which of the five oceans is most important to us?

The water in the ocean occupies vast low plains on the surface of the earth. The depth of the ocean



Fig. 47. — An ocean liner

© Detroit Publishing Co.

Compare the great ship in size with the tug that is towing it about the harbor.

hemisphere is water. On which side of the continents is the largest ocean, and what is its name? What ocean is east of us? Find two other oceans on this map. Why are they of much less importance to us than the Pacific and the Atlantic?

The right half of Fig. 46 shows the other half of the earth, the Old World. There is much more land there than in our hemisphere. What are the names of the Old World continents? The largest of all is Asia, and the smallest is Australia. The most important one to us, however, is Europe. Can you tell why?

One other continent appears far to the south in both the eastern and the western hemispheres. This is the Antarctic Continent. What were you told about it on p. 42?

Four of the oceans in the Old World are parts of the four found on our half of the

ocean is much deeper in some places than in others. Two miles is an average



Fig. 48. — An ocean vessel in dry-dock

The water has been pumped out from around the ship in this dry-dock, which shows you how far it must sink into the water.

depth. In many places, however, the ocean is more than four miles deep; and in one place, in the Pacific Ocean, the

depth is more than six miles. If the highest mountain in the world could be placed in the ocean at this point, its peak would be a half mile below the surface of the water.

The oceans are of great value for transportation as well as for water for rain (p. 12). They are broad highways upon which thousands of ships are always traveling, carrying people, food, iron and steel goods, mail, and many other things. A single large steamship, such as that shown in Fig. 47, may employ 500 or 600 men and carry several thousand passengers, besides many trainloads of freight.

One of the most important ocean routes in the world is that between New York and the seaports of the British Isles. Trace it on Fig. 315. Many other great coast cities of Europe have a large trade with New York. Name some of these cities, as shown in Fig. 315. The fastest steamers need only five or six days for the voyage across the Atlantic.

One of the greatest difficulties in the way of ocean transportation is that of loading and unloading freight.

Trucks can be driven alongside a railway car and quickly filled or emptied. But a large ship may sink thirty or more feet into the water (Fig. 48), so that it is difficult to find a place where it can come close to shore. Besides this, it cannot load or unload where there are large waves, such as are caused by storms.

Again, ships meet with many dangers upon the ocean. Storms are often severe, and the waves are so high that sometimes they sweep over, and for a moment almost cover up, even very large ves-

sels. When they are far out from land, large, well-built ships are not in serious danger in such weather, but smaller vessels, especially those that are old or poorly built, may be destroyed.

When ships of any kind are near the shore, however, they must be navigated very carefully. The shores of large lakes and the ocean are often very uneven, and the depth of the water may change quickly as a ship moves from one place to



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Fig. 49. — A reef

another. In some places there are dangerous shallows; in others there are hidden rocks, or *reefs*, that lie near the surface (Fig. 49).

Besides, *currents* in which the water moves as it does in rivers may float a vessel out of its course; and fogs are often so dense that a person can see only a short distance ahead. It is then very easy to lose one's way at sea. In addition to all this, strong winds and high waves may drive a ship in the wrong direction, in spite of all that can be done to prevent it.

Not all these difficulties and dangers can be overcome, but much is done to make navigation easy and safe. The

uneven shape of the coast may even be helpful. Very often the land partly surrounds a body of water, as in Fig. 50,

a wharf, and trucks or railway cars can run out on it close to the sides of the vessel. Then derricks on the decks of the ship

can lift freight from the cars or trucks and lower it through trap-doors in the deck (called *hatches*) into the hold; or they may lift freight from the hold and place it in the cars or trucks.

Harbors are so important that they are sometimes made on coasts where there are no good natural harbors. Walls of rock are built in such a way that they nearly shut in a body of water. Such a wall is called a *breakwater* (Fig. 52),

because it breaks the force of the waves and prevents them from entering the space behind.

It often happens that harbors are not so deep as they need to be. The vessels



Fig. 50

Find here and describe a harbor; a bay; a point; a cape; a peninsula; an island; an isthmus; a strait.

forming what is called a *bay*. Some of these bays are hundreds of miles long,

but many are much smaller than that. Many small bays have openings toward the

ocean large enough for vessels to enter easily, but small enough to shut out the fierce waves.

If the water is deep, as it often is, such a small bay makes a fine *harbor* (Fig. 50); that is, a place where vessels may be protected from storms and waves.

For the purpose of loading and unloading ships, piers of wood or stone, called *wharves*, are built from the shores of the harbor out into the deep water. Even a large vessel can be firmly fastened, or *moored*, to such



Fig. 51

©Keystone View Co., Inc.

The wharves in this picture were photographed from an airplane. Find two ocean vessels in this picture; five wharves; lighters; warehouses; freight cars.

now used are much larger and sink more deeply into the water than those formerly used. For this reason many harbors



Fig. 52. — A breakwater

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that were once deep enough are now too shallow. All the time, too, the waves and tides are bringing sediment that settles in the harbors, slowly filling them up.

Vast sums of money have to be spent, therefore, in deepening harbors. The loose sand and mud are dug out by dredges; but when the bottom is solid rock, it has to be blasted out. This work is of so great importance to all the people that the United States Government spends millions of dollars every year in doing it (Fig. 53).

So long as a ship lies in a good harbor, it is safe from most dangers. But when it is outside, on its way from one harbor to another, dangers are always present. Did you ever stop to think how a vessel finds its way on the great ocean?

While a ship is out of sight of land, its officers must guide it by the position of

the sun or of certain stars, using the compass and other instruments. But during storms and foggy weather, the winds and currents may cause even a large steamship to drift out of its course. Then, as a ship approaches land, the chief help is from *lighthouses* (Fig. 54), which are built in many places along the coast.

Often the land extends out into the water, forming what is called a *point* or a *cape*; if it is large and almost surrounded by water, it is called a *peninsula* (Fig. 50). Lighthouses are placed far out on such points or capes or peninsulas, or on islands near the mainland, so that their lights may be seen a long distance over the water. They are also built elsewhere, wherever the danger requires.

In some places there are dangerous shallows, or *shoals*, where it is impossible



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Fig. 53. — Deepening New York harbor

2. How ships
are guided
along the coast

to build a lighthouse. In that case, ships with lights on their masts, called *lightships* (Fig. 55), are securely anchored near by to give warning to sailors.



Fig. 54.—A lighthouse

© Brown Bros.

When the captain sees the light of a lighthouse or lightship, he knows that he is nearing land and must be very careful. How can he tell which light he sees when there are so many lighthouses? This is not difficult, for the lights are not alike. Some are white, others red; some give a steady light, others turn around and, as they turn, send out flash after flash. There are many different kinds, and the maps, or *charts*, that all ships carry tell the captain where each is placed. He also knows the special kind of lighthouse to be found at the entrance to the harbor for which he is bound.

In case of heavy fog, when the lights cannot be seen, powerful horns and whistles are blown for a warning. The lighthouses and lightships are well provided with these; they are blown every few seconds, or minutes, according to the need. When sailors approach the coast during foggy weather, they always

listen for the sound of the foghorn.

By such helps as these a vessel finds its way to the entrance of the port to which it is going. What a lonesome life the people who live in the lighthouses and lightships must lead, attending to the lamps and giving warning in the fogs! But how important their work is in saving ships from destruction on the wave-beaten coasts!

The entrance, or *channel*, to a harbor is often narrow, and sometimes on each side there are reefs and shoals on which a vessel might be wrecked. It is necessary, therefore, that the channel be clearly marked. This is done by placing hollow iron *buoys* here and there. These float on the surface, but are anchored firmly in their places. They are guide-posts to the sailor, pointing out the way.

3. The use made of buoys



Fig. 55.—A lightship

Dangerous rocks and shoals are also marked by buoys; and many of these are so made that they send out a shrill whistle or ring a bell every time they are

moved by the waves. On this account | huge waves, and clamber up a rope ladder they are called *whistling* buoys or *bell* | on the side of the big ship.



Fig. 56

© Brown Bros.

At times old buoys have to be replaced with new ones.

buoys (Fig. 56). Buoys like those shown | a sharp lookout for shipwrecks and in seconds, like tiny floating | going to the rescue when wrecks occur. lighthouses.

It is so important that no mistake should be made in entering a harbor that men called *pilots* make a business of guiding or piloting ships into harbors. They go out in sailboats or motor boats, often several miles from shore, to wait for a ship that they know is coming. When it draws near, the pilot rows to its side in a rowboat that his sailboat or motor boat has been towing. In stormy weather it is exciting to see a pilot row up in his little boat, tossed about by the

In spite of all the care that is taken to guide ships safely into harbors, one is now and then wrecked on the coast (Fig. 57), especially in foggy and stormy weather. Then, of course, the lives of sailors and passengers are in danger. Hence it is important that some means be provided for saving shipwrecked people. This is done through *life-saving stations*. Here and there along the coast such stations are found, where several men spend their time in keeping

5. The work of life-saving stations

4. The work of pilots



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Fig. 57. — A ship that has been wrecked

At such times they boldly launch their lifeboats through the surf and perform many acts of bravery.

1. Name the continents in the New World, and tell their shape. 2. Name the oceans in the New World and *locate* them; that is, tell where they are. 3. Name and locate the continents of the Old World; the oceans. 4. What can you tell about the depth of the ocean? 5. Explain the value of the ocean for transportation. 6. Mention some of the difficulties and dangers ocean vessels must meet. 7. What is meant by a *harbor*, and how are safe harbors obtained? 8. How are ships guided along the coast? 9. What are *buoys*, and how are they of value? 10. Explain the work of *pilots*. 11. Of *life-saving stations*.

1. Compare the amount of land in the eastern hemisphere with the amount in the western (Fig. 46). 2. On maps of the northern and southern hemispheres, how would the amounts of land compare? 3.

Leaving out the islands, how many land bodies can you find? 4. Which body of land extends farthest north?

5. Which one, except the Antarctic Continent, extends farthest south? 6. Which continent has the smoothest coast line? 7. Which the roughest? 8. Which continents are crossed by the equator? 9. Name the continents that lie in three zones. 10. Name those that lie in only two. 11. Tell which continent is not inhabited, and why. 12. What is the largest island in the world? 13. Where is it? 14. Name and locate three other large islands. 15. What direction is North America from South America? 16. Locate Cape Horn; the Cape of Good Hope. 17. Locate eight seas in the eastern hemisphere and two in the western. 18. Which of these seas are nearly surrounded by water?

Review
questions

Suggestions
for extra
work

PART II. NORTH AMERICA

I. THE COUNTRIES OF NORTH AMERICA

If you look at the map of North America (Fig. 59), you will see that the continent is divided into several countries, or *nations*. In the center, extending from ocean to ocean, is the *United States*. North of our country is *Canada*, and northwest of that is *Alaska*. South of us lies *Mexico*. Southeast of that is the group of countries called *Central America*. On an outline map of North America mark off each of these sections.

You remember that Spain was the nation that helped Columbus to make his discovery of America. After his voyages, many Spaniards came over and settled in the southern part of North America. They occupied the parts now called Mexico and Central America. All this section, and some of the land to the north of it which is now a part of the United States, were for many years owned by Spain. Indeed, at one time it all bore the name of *New Spain*; but the government of Spain was so bad that the people rebelled and won their freedom.

The Spanish language is still spoken in almost all of North America south of our country. This section of North America is now divided into several different countries. The larger part of it, called Mexico, is now one country. Cen-

tral America is divided into several small nations. It is called Central America because it lies between two continents. There is no single country of that name.

The small country of Panama occupies the narrow Isthmus of Panama, which joins Central America with South America. That is where the Panama Canal is located, connecting the Atlantic and Pacific oceans (p. 148).

Other nations besides Spain sent explorers to America and made settlements. Chief among these were the English and French. The English settlers at first made their homes along the eastern coast, as in Massachusetts and Virginia. The French chose the basins of the St. Lawrence and Mississippi rivers. Find these rivers on Fig. 58. As the result of war, the English obtained control of the French territory, and English became the principal language of all the continent north of Mexico.

Even now, however, one is reminded of the old French rule. French is still heard in New Orleans, near the mouth of the Mississippi River, and is the common language in the part of Canada near the city of Quebec, on the St. Lawrence River. Find Quebec on Fig. 61. The names of many places in the Mississippi

The principal divisions of North America

The countries in which Spanish is the principal language, and the reason

Why English is the principal language in our country, and why French is spoken in some places

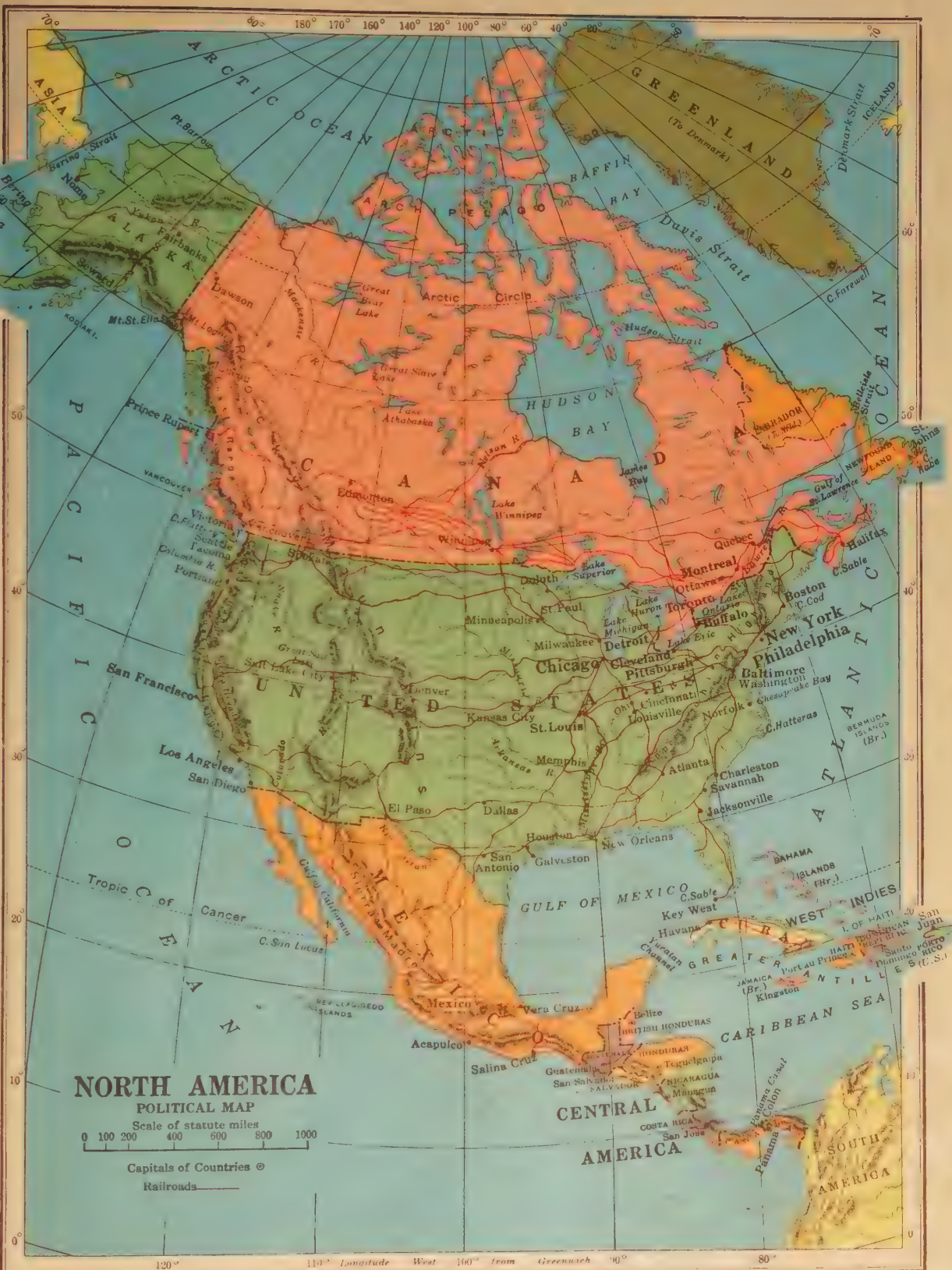


Fig. 59

and St. Lawrence basins, such as New Orleans, St. Louis, and Montreal, are French. They were given when these places belonged to France.

For many years the colonies in America were governed by England; but finally

How the United States came to be a separate country

many of the colonists became dissatisfied with English rule. As a result, a war for independence broke out, which lasted several years. The

leader of the colonies in this war was General George Washington. The colonists declared themselves independent on July 4, 1776, a date which you celebrate every year. How old, then, is our country? The colonists did not gain their independence, however, without several years of hard fighting and much suffering.

Our ancestors who fought in this war formed a new nation of their own which they called the *United States*. At first there were only thirteen states in the Union. All of them were on the Atlantic coast. These were New Hampshire, Massachusetts, Connecticut, Rhode Island, New York, New Jersey, Pennsylvania, Delaware, Maryland, Virginia, North Carolina, South Carolina, and Georgia. Find each of them on Fig. 63.

Slowly other states and territories were added, until our country now extends across the continent, as you see. It even includes Alaska (p. 143) and important groups of islands in the Pacific and Atlantic oceans (p. 147).

Our flag still has its thirteen red and white stripes, to remind us of these thirteen original states. In the blue field it also has a white star for each state. Count the stars in the flag to see how many states there are now.

The Dominion of Canada is a union of states, or *provinces*, somewhat like our United States. It has remained friendly to England, and is a part of the *British Empire*, or family of nations led by England. But the people of Canada have slowly become almost as independent of England as they would be if they had fought for their independence.

The parts of the continent that are still parts of the British Empire

Notice, on Fig. 59, the large island of *Newfoundland*, near the eastern coast of the continent. This also was kept by England and is still a part of the British Empire; but it has never joined the Dominion of Canada and has, therefore, a separate government.

Of course, where two countries lie side by side, as do Canada and the United States, there must be some line where one country ends and the other begins. Such a line is called a *boundary*. The boundary lines between the different nations are shown on Fig. 59 by broken black lines.

How the boundaries of these countries are shown on maps

In some parts you will see that a *natural boundary*, such as a river or a mountain range, separates neighboring countries. In other places the boundary does not follow any natural line, but is an imaginary straight line, cutting across rivers, lakes, and mountains. Examine the boundary of the United States to see how much of it is natural.

Fig. 59 is a map of North America showing the boundaries of the different countries and the location of the largest rivers and cities. Such a map is called a *political* map. Trace the Mississippi River. Locate New York; San Francisco; Chicago.

The purpose of political maps



Fig. 60



Fig. 61



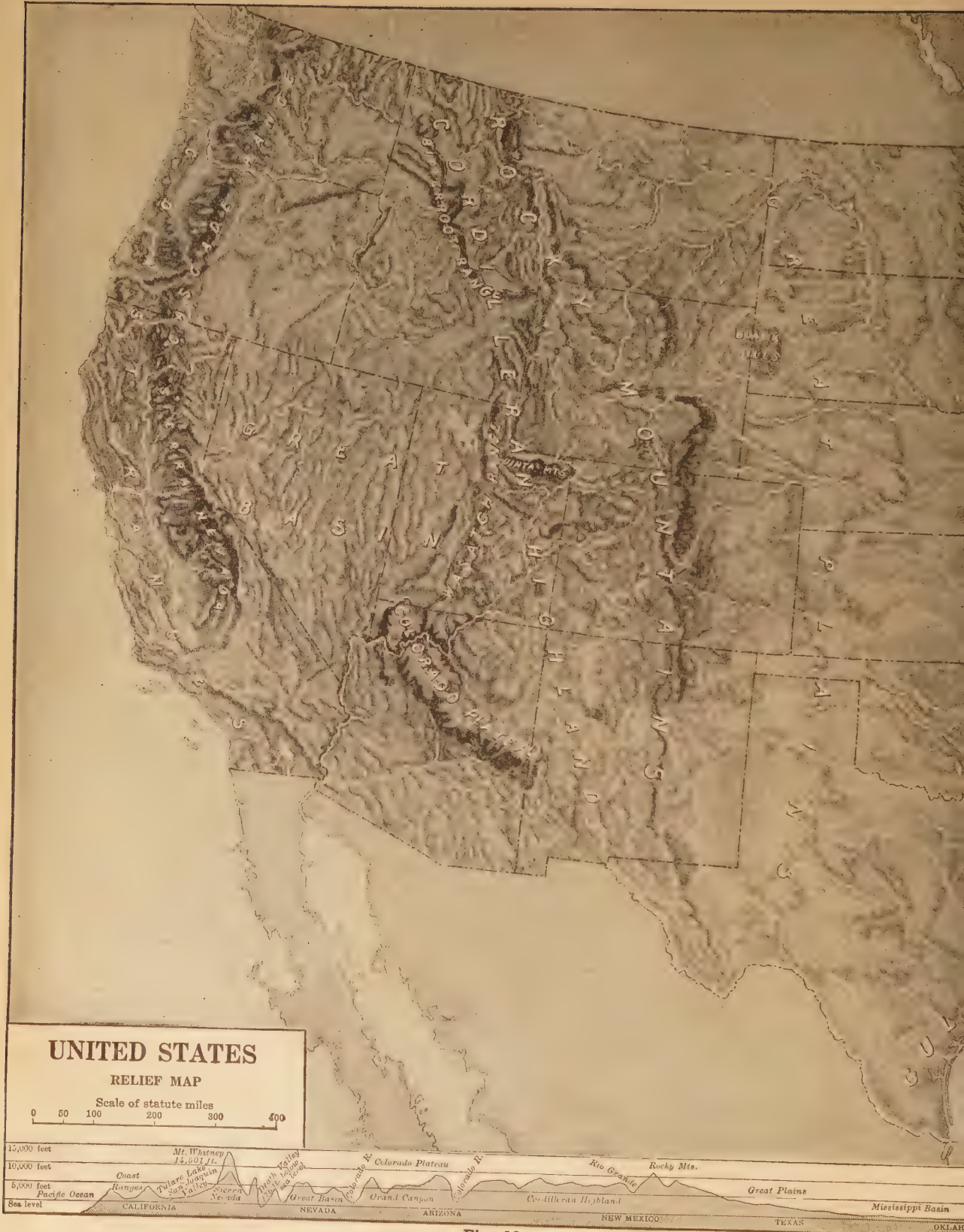


Fig. 62

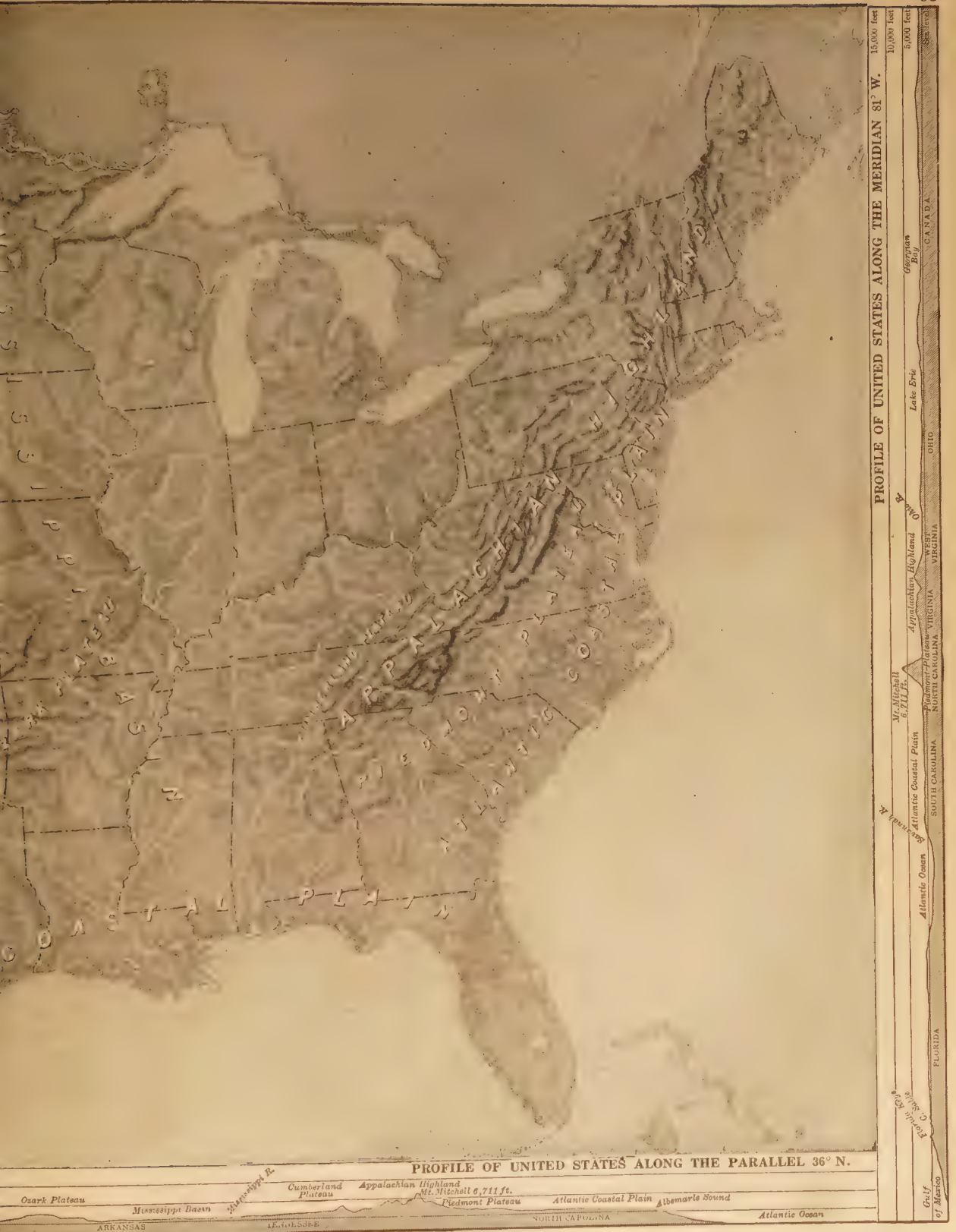


Fig. 62



Fig. 63

Fig. 58, a *physical* map, is very different from Fig. 59. Its purpose is to show the height of the land, or the high and low parts of the continent by means of colors.

The purpose of physical maps

Compare this map with Fig. 60, which will help you to understand the meaning of the different colors. Fig. 60 is called a *relief* map. It shows how the continent would look if the mountains were a great deal higher than they really are.

What great backbone of mountains, or *highland*, do you find in the western part of North America? What great highland in the east? In what direction does each of these highlands extend? Which is the broader? Which is the higher? Trace, as nearly as you can, the boundaries of each.

Where is the lowest land between these two highlands? Show the length and width of the Mississippi Basin. Notice the slope east of the Appalachian Highland. Is it longer or shorter than that

west of the western highlands? What are the main slopes in North America? Upon which of these slopes or highlands do you live?

If you look at Fig. 59 you will see that its scale is about 675 miles to the inch. Knowing this fact, find how many miles it is across our country from north to south, measuring from our northern boundary to the mouth of the Rio Grande. Find the width of our country in an east-west direction, from New York to San Francisco. The United States is not quite so large as Canada. How does it compare with Mexico in size?

The size of the United States

On Fig. 61, point out the highlands and slopes that are shown also on Fig. 58. Notice that this map is on a *larger scale*. Fig. 61 is both a *physical* and a *political* map, for it shows both the height of land and the boundaries of the states. What facts about our country are shown on Fig. 61 that are not shown on Fig. 63? Note how Fig. 62, a relief map of the United States, helps you to understand what the colors of Fig. 61 mean. Notice especially by comparing Figs. 61 and 62 that, except where there are mountains, highlands and lowlands shade into each other *gradually*. On the other hand, what other facts are shown by Fig. 63 but not by Fig. 61?

Physical maps do not show countries or states or cities. Political maps do not show the height of the land. *Physical* and *political* maps, however, show both.

In studying physical maps, or physical and political maps, you should pay careful attention to the key, to see which colors represent lowlands and which represent highlands.



Fig. 64.—New York City

1. Name the principal countries of North America. Write their names.

Review questions

2. In what part of North America is Spanish the principal language? Why? 3. Why is English the principal language in our country? Why is some French still spoken in North America? 4. How did the United

States come to be formed? 5. What countries of North America are parts of the British Empire? 6. What are the two kinds of boundaries between countries? 7. Explain the purpose of political maps. 8. Of physical maps. 9. Of relief maps. 10. State some facts showing the size of the United States.

II. THE NORTHEASTERN STATES

In Fig. 66 find New York City. Fig. 64 represents this city on a scale many times larger. By using the scale of the map, measure the length of the city north and south. (The broken line shows the city boundary.)

One of the first things that would interest a stranger there is the great number of people. If he enters

Things that would interest a stranger in New York City

1. The number of people

the city from the north, he soon sees long streets thronged with them. If he travels southward through it, he finds people everywhere, and at many points the crowds are as dense as those at a county fair. Likewise, if he crosses the East River and passes through the part of the city called Brooklyn, he finds just as many people there. By thus traveling about in all directions, he begins to understand what is meant by the statement that New York has nearly 6,000,000 inhabitants and is the largest city in the New World.

The great buildings are among the wonders of the world. Fig. 67 suggests how much larger many of them are than those in small towns. Most of those in the picture are office buildings, used for business. The tallest one is the Woolworth

Building; it is fifty-five floors, or *stories*, high. Fig. 65 shows the number of the offices on one of the lower floors. Such a floor can accommodate about 200 office workers. The higher floors are reached by express elevators that do not stop below the 27th floor. All together, several thousand persons occupy this building.

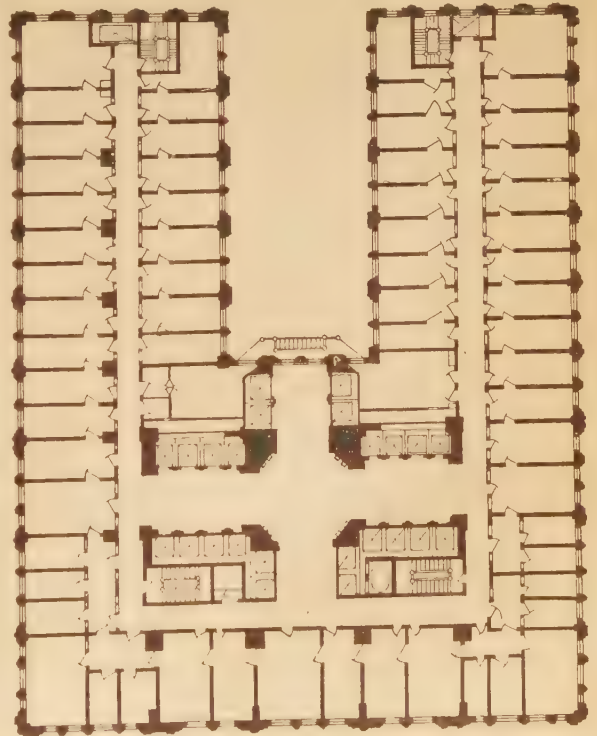


Fig. 65. — A plan of one of the fifty-five floors of the Woolworth Building

2. The size of the buildings

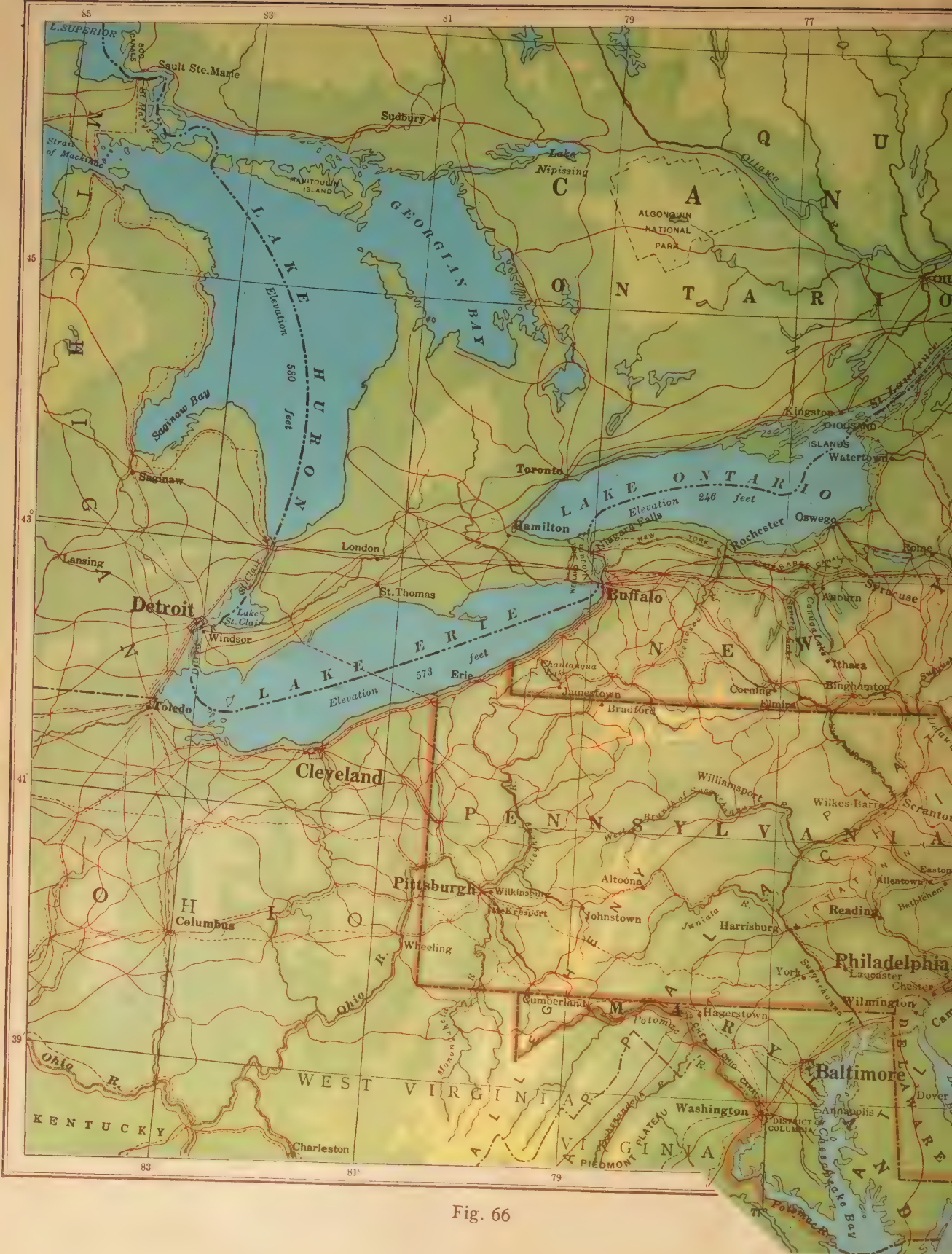


Fig. 66

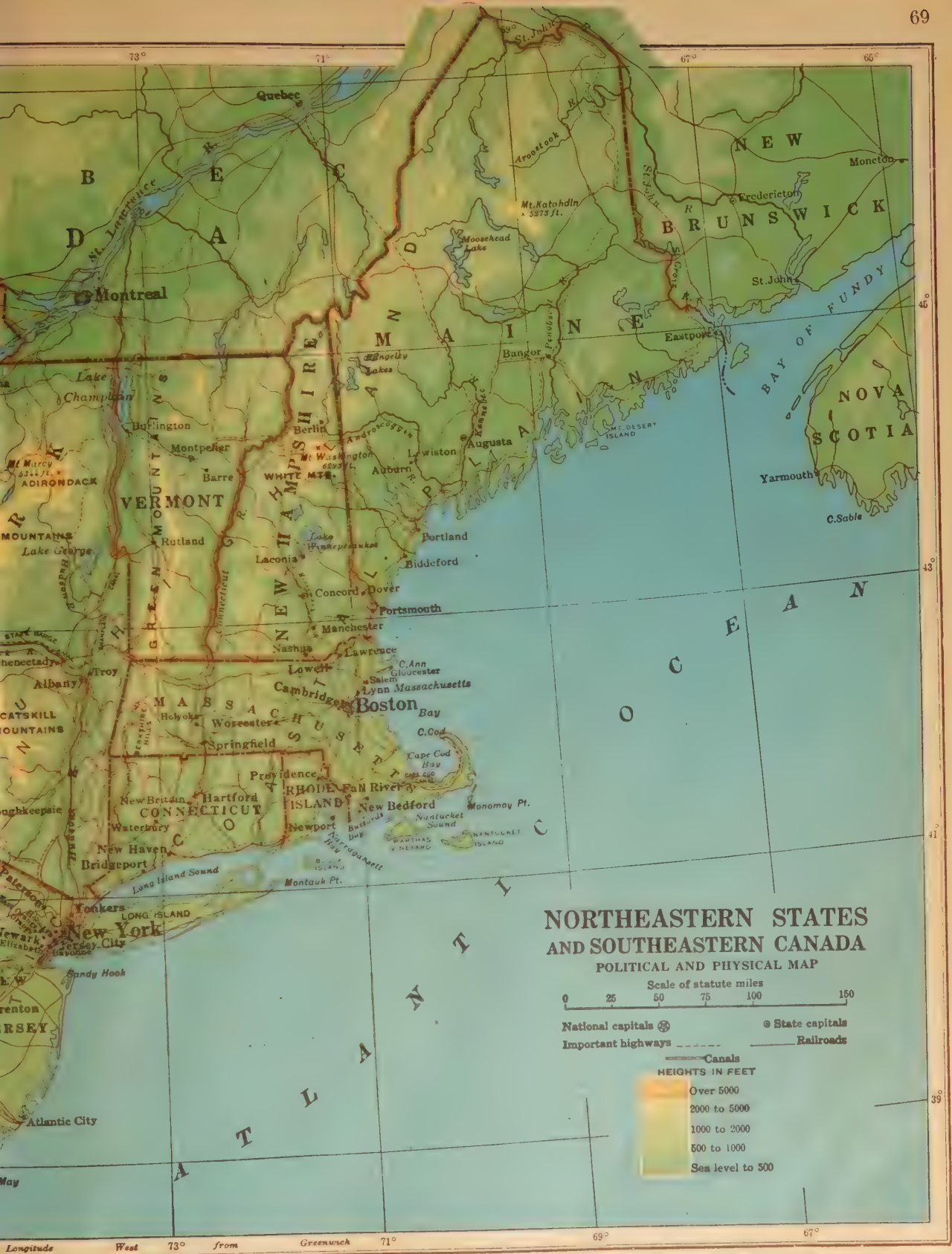


Fig. 66

Some of the most important banks in the world are located in the southern part of Manhattan Island, a picture of which you see on this page. One such bank employs more than 2,500 persons; and there are others that employ nearly as many. The largest stores are found a little farther north on the island, and are usually from eight to twenty stories high.

only a part of one floor, called an *apartment* or a *flat*. Other families may live above and below, as well as on each side; they are separated from one another only by walls or partitions. There is usually little or no space between such buildings, and in the more crowded sections of the city a single block sometimes contains as many as 4,000 persons.

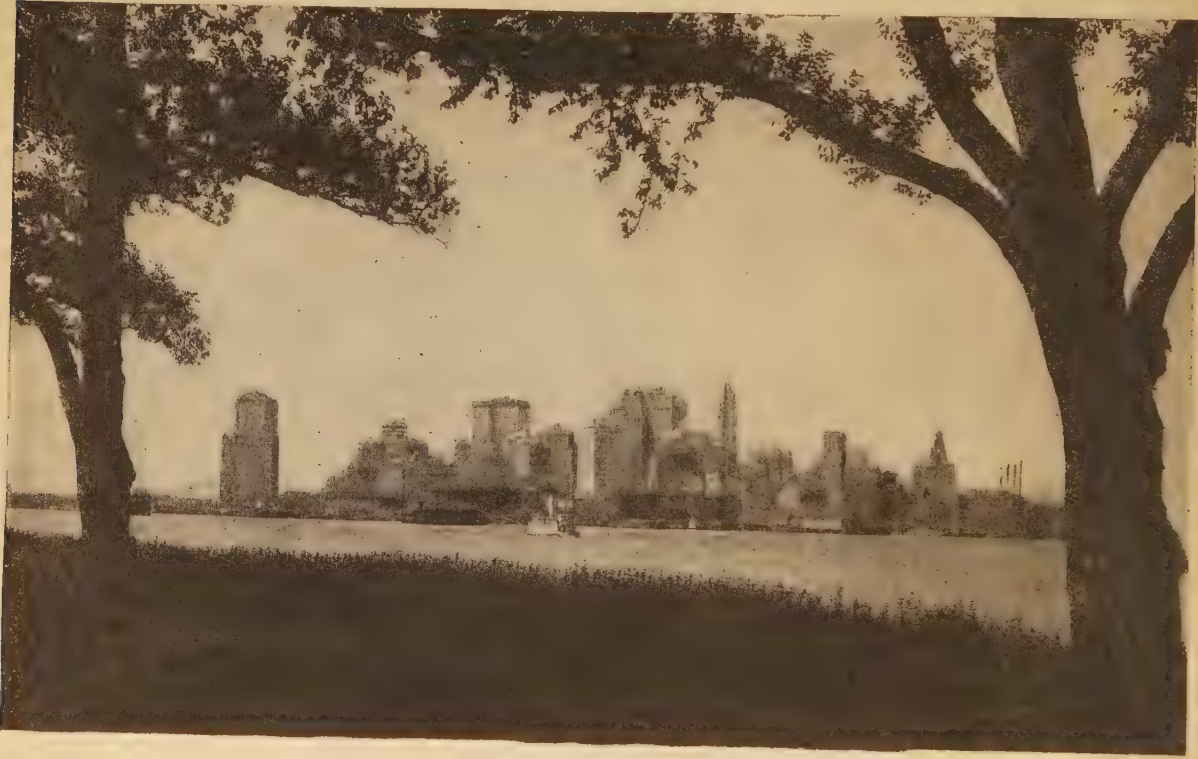


Fig. 67. — Manhattan Island from New York Harbor

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One of them employs more than 5,000 persons; and many employ 2,000 or more.

The buildings in which the people live are not usually separate houses; for a whole house for one family takes up too much room and is too expensive. Generally, many families live in a single building, called an *apartment house* or a *tenement*, which is so arranged that each family occupies

What objections do you see to such homes?

To escape such crowding, tens of thousands of persons live outside the city, ten to forty miles from their places of business. Even those whose homes are in the city generally live a long way from their places of work. Hundreds of thousands, therefore, spend from one to three hours

3. The kinds of homes

4. How the people travel

traveling every day. Many ride upon street cars, busses, ferryboats, and steam railroads. Some use the elevated railroads, built in the street two, three, or more stories above the ground, and supported by steel columns. Others travel by underground railroads called *subways*, or pass through tunnels under the East River to Long Island, or under the Hudson River to New Jersey (Fig. 64).

At about five o'clock in the afternoon the thousands of business places begin to pour their throngs into the streets; and for the next hour every street car, train, bus, and ferry is jammed with people. In the subway and elevated trains it is hard to get even standing room. Every morning there are similar crowds. Thus day after day the people travel to and fro. The crowding at these *rush hours*, as they are called, is greater in New York City than in any other city in the world.

The scenes in the harbor are as interesting as those

on land. Hundreds of ships from all parts of the world can be seen there at any time. Some are just reaching the city after weeks of travel from China, South America, and other distant lands; some are loading or unloading their freight and passengers at the piers; and others are just leaving on their way to foreign countries. Powerful tugboats are towing the large vessels to and from the docks, and many ferryboats are passing back and forth.

The principal business section of the city is on Manhattan Island, which is thirteen and one half miles long and two and one quarter miles wide at its widest part. The largest buildings are in its southern portion. One gets some of the best views of the city by sailing around the island. Fig. 67 is a picture of the southern section seen from the water. Mention some of the things of interest that you see in it.

How do so many people make a living? They do many different things. For example, more than 200 daily newspapers are published in the city and more than 1,000 weekly papers. Think of the number of persons kept busy gathering the news, printing it, distributing the papers, and attending to other parts of such a business! There are nearly 1,000 hotels,

How so many people make a living

1. The many kinds of work



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Fig. 68. — A few of the ships in New York harbor

The small boat in the center of the picture is a lighter, which carries freight to and from the ships and thus saves the trouble of moving the large ships to many docks.

some of which have over 2,000 rooms and employ as many as 2,000 persons. There are more than 30,000 public school teachers, and more than 1,000,000 young people going to public schools. Think how many grocery stores, drug stores, moving-picture theaters, and restaurants there must be! Most of the kinds of work that are done elsewhere are going on here also. Can you name a dozen kinds that have not been mentioned?

While there are so many occupations, there are two that are especially important. One is transportation.

2. Why transportation is one of the leading occupations

a. Vast amount of transportation

The streets are so filled with trucks in many sections of the city that it is difficult to pass through them. In the harbor you may see whole freight trains containing goods being towed on flat boats, called *lighters*. On the docks many thousands of men, called *longshoremen*, are kept busy loading and unloading ships. Trains filled with freight from all parts of the earth are coming or going at all hours. More than 1,300 carloads of food alone are brought into the city every day. In all, probably not less than 250,000 men and women are employed in the city in the transportation of goods and passengers.

One reason for so large a number is the excellent location of New York on the

b. Advantage of the location of New York

Atlantic coast. The Atlantic is the busiest ocean in the world; for in Fig. 315 you see that to the east of it is Europe with its enormous population of 445 millions. Westward from New York our own country stretches out for 3,000 miles, with its many millions of people. In Fig. 63 read the names of the states that one

would cross in going directly west from New York to the Pacific coast by way of Pittsburgh, Chicago, and Omaha. Thus New York lies directly between great numbers of persons who trade with one another.

The large, deep harbor is another reason for the importance of transportation in New York. Many coasts are so straight that there are ^{c. Excellence of the harbor} no good natural harbors; but it is not so here. The Upper Bay, which you see in Fig. 64, is six miles long and five miles wide; this is large enough to shelter hundreds of vessels at a time from storms. There are many other places within New York harbor where ocean vessels can anchor safely. Point out some of them.

There is an enormous number of piers. On many coasts the water is so shallow near the land that ships cannot come close to it; they must anchor a mile or more out at sea, where they are met by smaller boats that come to load or unload them. At New York, however, the largest vessels, which sink thirty or more feet into the water, can come directly to the piers along the shore, where they are met by trucks and freight cars. Fig. 51 shows some ships resting at the piers in the Hudson River. The piers extend along both shores of the Hudson River in an almost unbroken line for several miles, and there are miles of piers along both sides of the East River and the shores of the Upper Bay.

How is the city connected with the country on its west? Fig. 62 shows many mountain ridges between New York and the Mississippi Basin. What are they called? ^{d. Easy trade with the country on the west} Across what states do they pass? In

the early days they were like walls in stopping the westward movement of settlers. Yet there was one easy route which soon became very important; that was the one leading up the Hudson River to Troy, and then westward between the Catskills and the Adirondacks. Locate these two mountainous regions. Between them the Mohawk River flows eastward into the Hudson. No point along this route is more than 500 feet above the sea, and it crosses no mountains whatever. It is so nearly level that a canal covering the whole distance from Troy to Buffalo, and known as the Erie Canal, was completed more than a hundred years ago. The building of it was an important event for New York City, for it made it possible to carry freight by boat up the Hudson to Troy; then through the canal to Buffalo; then to any point on the Great Lakes as far west as Duluth. Trace this route on Fig. 61 and measure roughly the distance from New York to Duluth. Since it was much cheaper to haul goods by water than in any other way, the city gained an advantage for trade with the West that no other Atlantic port has ever had. Later the New York Central Railroad was built along the same route to Buffalo. Many other roads now run from New York northwest, west, and southwest; these do not avoid the mountains but cross them by means of steep grades and tunnels.

New York City is, therefore, the principal gateway between countries across the Atlantic and the United States. Half of all goods brought into the United States enter at this gate; and a third of all that we send abroad go

out the same way. In fact, New York is the greatest port in the world.

All the goods that come or go must be transferred at this point from ocean vessels to smaller boats or trains; or from all these to warehouses and stores in the city itself. It is because this work keeps so many persons busy that transportation is one of the chief occupations in the city.

The other occupation that is especially prominent is manufacturing. Any place that enjoys great advantages for transportation of freight is likely to be an important manufacturing center. This is because most manufacturing is done

3. Why manufacturing is especially important



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Fig. 69.—A lock in the New York State Barge Canal

For most of its length, this canal follows the route of the old Erie Canal, which was finished in 1825. On the right is one of the small locks of the Erie Canal. Trace the route of the Barge Canal across New York State (Fig. 66).

where the raw materials that are to be made over into manufactured articles can be collected, and finished articles shipped away, most easily.

The amount of manufacturing depends also upon the supply of workmen. New York is very fortunate in this respect. Most of the hundreds of thousands of people who come from other countries to the United States each year enter by way of New York. At Ellis Island, in the harbor, the new arrivals, called *immigrants*, land and are examined by Government officers to see whether they shall be permitted to remain in this country. Fig. 70 shows a group of such immigrants. Many, instead of going beyond New York, remain in the city; in fact, about two fifths of all the inhabitants of the city were born abroad. These foreigners have helped greatly to supply the factories with workmen.

New York, therefore, manufactures thousands of different kinds of articles, from ink for newspapers to steam engines

and steel ships. The value of its manufactured articles is about one tenth of the total value of those of the United States. Among the immigrants are a great number of workers in clothing factories. Partly for this reason, the manufacture of ready-made clothing is the largest manufacturing industry. Probably not less than 200,000 persons are engaged in it, and nearly one half of all the ready-made clothing for both men and women in the United States is made in this city.

In New Jersey, just across the river from New York, is another vast population. Newark (Fig. 66) contains more than 400,000 inhabitants, and Jersey City nearly 300,000. There are five other cities about the harbor in New Jersey that average more than 50,000 each.

How cities about New York and others southwest of it compare with it in advantages for transportation

Within fifteen miles of Manhattan Island are more than 7,000,000 persons. What part of the entire population of the United States does this number make (Appendix)? All these cities use the same harbor and therefore enjoy the same advantages for transportation that New York has; in fact, they are practically a part of that city. Make a drawing of New York harbor showing all the large cities beside it.

Only ninety miles southwest of New York is Philadelphia (Fig. 66), the third city in size in the United States. With its neighbors, Camden and Wilmington,



Fig. 70. — Polish immigrants at Ellis Island

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it contains a population of more than 2,000,000. This group of cities has grown to its present size chiefly because of the fine inland harbor which is formed by



© Ewing Galloway

Fig. 71. — Independence Hall, Philadelphia
Why is this called the birthplace of our country?

the Delaware River. Trace the course of this river from the Catskill Mountains to the Atlantic Ocean.

About ninety miles southwest from Philadelphia is Baltimore (Fig. 66), the eighth city in size in our country. Its location so far inland brings it many miles nearer than Philadelphia or New York to the states west of the Appalachian Highland with which it trades. Why is this a great advantage?

In Fig. 150 you can see that some of the same railroads that connect New

York with the West and Southwest pass through Philadelphia and Baltimore; but they do not have the water connection with the Great Lakes by way of the New York State Barge Canal, and their trains going west must climb 2,000 feet to get over the mountains. How are these facts serious disadvantages?

Two hundred fifteen miles northeast of New York is Boston (Fig. 66). Taken by itself, it is the seventh city of the United States in size; but with Cambridge and other cities close by it has a population of more than a million. Here also, the fine harbor partly explains so large a number of inhabitants. For a long time, high hills in western Massachusetts blocked Boston's trade with the West, just as the Allegheny Plateau blocked theirs

How Boston and the cities about it compare with New York in advantages for transportation



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Fig. 72. — The Old North Church, Boston

for Philadelphia and Baltimore. What range of low mountains is found there (Fig. 66)? Railroads were finally built across it, and Boston was connected by rail with Albany. Measure the



Courtesy of Keystone Coal and Coke Co.

Fig. 73. — Coal mining as it is done to-day

Notice that machinery is used to loosen the coal. This miner carries his light with him, on his cap.

distance to Albany. Thus Boston gets some benefit from the Mohawk route (p. 73). How?

Just as the great Atlantic ports are the principal gateways between Europe and the United States, two other cities in the Northeastern States are gateways between those ports and parts of our country that lie farther west. These are Buffalo and Pittsburgh (Fig. 66), which are also among our largest cities (Appendix).

Buffalo is on the route from New York City westward at the point where goods

going east or west by water must be transferred from one kind of boat to another. It is the point, also, at which many goods are transferred from railroad car to boat or from boat to railroad car. That makes its harbor very important.

In Fig. 66 you see that Pittsburgh is located in western Pennsylvania at the point where the Allegheny and Monongahela rivers join to form the Ohio River. Since the Ohio flows into the Mississippi, this location connects Pittsburgh by water with all parts of the Mississippi Basin. In Fig. 61, show some of the more distant places that can be reached from Pittsburgh by boat.

These two cities are also on the routes of the principal railroads running from the Atlantic coast to Chicago, St. Louis, and other more western cities. Therefore most of the freight bound from the Atlantic coast to these sections, or from them to the Atlantic coast, passes through one of these cities.

The many cities that have been named differ greatly in size. All the others taken together have a smaller population than those around New York harbor. Nevertheless they all resemble New York in two very important ways. In every one of them transportation of goods and manufacturing are important occupations. Indeed, the Northeastern States and the eastern half of the North Central States are the principal manufacturing sections of the United States. The value of the manufactured goods made in those sections is three fourths of the value of all the goods manufactured in the United States.

Two ways
in which all
these cities
are like
New York

Buffalo and
Pittsburgh
compared with
the Atlantic
coast cities in
transportation
of goods

Why do the Northeastern States manufacture so much? It is chiefly because of the coal that is mined in Pennsylvania and West Virginia. Let us see how this can be true.

Where the power comes from

1. Signs of coal seen by the traveler

The traveler in those states sees many signs of coal. In numerous cities there are great numbers of coal miners in the streets at certain hours of the day. They can be recognized by the coal dust upon them, and by the miners' caps that they wear. In certain sections one sees by the roadside in the hills and mountains openings that are tunnels leading to coal mines. Now and then thin layers of coal show in steep hillsides or cliffs, and a small coal mine for private use may be found on a farm or even in a back yard.

Many mine openings that extend directly downward into the earth are surrounded by ugly mounds of waste coal and rock, called *culm*. This has been thrown there because there was no better place for it. These mounds remind us of what is going on underground. Many cars filled with coal are seen in almost every passing freight train. In weight, the coal from Pennsylvania makes about half of all the freight hauled by railroads in that state.

Two kinds of coal are mined here. One is *anthracite*, or hard coal, which is found in the eastern part of Pennsylvania about Scranton and Wilkes-

2. Kinds of coal and quantity mined.

Barre. These are called coal cities because their principal interest is in coal. About 85,000,000 tons of anthracite are mined in eastern Pennsylvania each year, which makes that region the greatest center for anthracite in the world.

In the southwestern part of Pennsylvania and in West Virginia, *bituminous*, or soft coal, is mined. Nearly twice as much bituminous coal as anthracite is mined each year in Pennsylvania, or about 150,000,000 tons. All together, about half a million men are employed underground in Pennsylvania and West Virginia and those two states mine about two thirds of all our coal.

Without this coal, neither transportation nor manufacturing could flourish as they do; for it supplies the heat that makes steam, and steam is what turns the wheels of most locomotives and factories. Oil and gas, both of which are also obtained from underground,

3. How this coal compares with other fuel and water power in importance



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Fig. 74. — A part of Niagara Falls

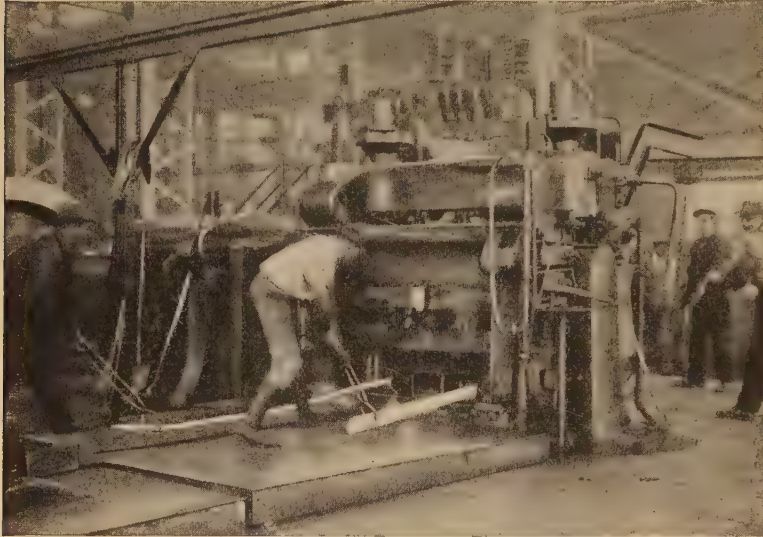
are often used in place of coal; Pennsylvania and New York produce a little of each. Water power, also, can take the place of coal. Niagara Falls, for example, furnishes power for cars and fac-

beams for bridges and for large buildings, and heavy cannon. Most of the great cities in these states, especially Pittsburgh, are well known for the manufacture of

1. Kinds of iron and steel manufactures in Pennsylvania and states near it, with the explanation

one or more kinds of heavy articles. As we have seen, plenty of coal is mined near by. Besides, *iron ore*, the iron-bearing earth from which iron is made by melting it, can be obtained easily. It comes by way of the Great Lakes from Minnesota. This is a long distance, but the fact that it is brought most of the way by water makes the transportation cheap.

In the group of six states to the east of New York State, called *New England*, very different kinds of



A steel mill

By courtesy of the Ford Motor Co.

This is part of an automobile factory in Detroit. White-hot bars are being squeezed here into longer, thinner bars.

tories more than a hundred miles distant from the falls themselves. Yet most of the power for running machinery comes from coal; so you can easily see that the coal that is mined in Pennsylvania and West Virginia is the chief reason why there are so many factories in the states we are studying.

Pennsylvania, New York, New Jersey, Maryland, and Delaware have factories for making almost every kind of manufactured goods. But most of their largest factories make heavy iron and steel articles, such as steel ships, engines of all sorts, rails, stoves and furnaces, elevators, railroad cars, trucks, automobiles, heavy machinery, steel

things are made. This region is noted for its tools, knives and forks, guns, locks, screws, needles and pins, clocks, watches, jewelry, and other light articles made of metal. Perhaps you can see one reason for the difference. Neither iron ore nor coal is mined in these states; and since it is expensive to carry both materials so far, articles are made here that require very small quantities of coal or metal.

New England is noted for other manufactures, also. It grows no cotton and raises few sheep or beef cattle, which of course supply the raw materials for cotton, woolen, and leather goods. Nevertheless it is the most important region

2. The kinds of metal goods made in New England, and one reason for the difference

The differences among states in the manufacture of iron and steel goods



G. M. RICHARDS

DEVINNE-HALLENBECK CO., N. Y. C.

Blast Furnaces



in the United States for the manufacture of cloth and clothing made of these materials. The other states in this

Why cotton, woolen, and leather goods are especially important in New England

1. Where these manufactures are carried on

group have some factories for the making of *textiles*, or cloth goods; indeed, Paterson in New Jersey is the leading center for silk manufacture in our country, and Philadelphia is noted for rugs and carpets; but these more western states work very little with textiles compared with southeastern New England. Most of the cities in the latter region are engaged in the cotton, woolen, or leather industry. They produce such articles as thread, muslin, calico, cloth for men's and women's suits, stockings, underwear, shoes, pocketbooks, leather bags, and harness. Many of them are engaged in two of these industries, and some in all three. This is true of all the larger cities in southeastern New Hampshire, eastern Massachusetts, and Rhode Island. Name and locate some of them (Fig. 66).

How did they come to undertake such manufacturing when they lack fuel and even the raw materials for manufacture? The answer is found partly in the history of the people. The early settlers of New England were a long way from Europe and had no one else to depend on; therefore they had to make most of the things they used, such as clothing and shoes. In that way they became skilled workmen. Later, when other parts of the country also needed such articles, they began to build factories, making use of their abundant water power to run them. Then new immigrants from Europe went into these factories, rather than to the farms;

thus a large supply of skilled labor was obtained. In this way New England got an early start in these kinds of manufacturing. There are, to be sure, many natural disadvantages. The inhabitants must depend more upon coal than upon water for power, since the rivers do not always have the same supply of water; and the raw cotton and most of the wool and leather must be brought long distances. Their one great advantage is their large number of workmen highly skilled in the manufacture of such products.

On what river is Washington located (Fig. 66)? Perhaps some day you will visit that city. What would you expect to see there? It is one of the most attractive of all our large cities. Since it is the

Attractions of the city of Washington



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Fig. 76. — A New England clock factory

capital of our country (p. 30) and therefore interested mainly in government, it does not have the many factories, the



© Manufacturers' Aircraft Assn.

Fig. 77. — The Capitol at Washington

factory workmen, or the street traffic that other large cities have. Also, the principal buildings are not places of business but government buildings. The most important is the Capitol (Fig. 77), in which our Congress meets. Another of special interest is the White House (Fig. 31), in which the President lives. There are dozens of others also, because the work of carrying on the government requires offices for a great many men and women.

Most large cities have followed no definite plan as they have grown; but the arrangement of the streets and buildings in Washington was planned from the beginning. Its site furnishes some magnificent views across the Potomac River; its streets are especially broad, parks and monuments are very numerous, and trees are

far more common than in any other large American city.

Although more people in the world are engaged in farming than in any other single occupation,

Difficulties
of farming in
these states

there is not so much farming in these states as in the other sections of the country. In fact, most of the people in this section live in the cities. There is plenty of rain for agriculture, and the temperature

is mild enough, but much of the land is hilly or mountainous. In Fig. 66 locate the principal mountain groups and ridges. In what directions do the highlands extend? What are the names of the principal ranges in Pennsylvania? In New York? In New England? Which states are the most mountainous?



© Brown Bros.

Fig. 78. — An apple orchard in blossom in New York State

Point out the more level parts of this section. Even where there are no mountains, however, some of the land is so hilly and rocky that it cannot be cultivated easily.

In spite of these difficulties, farming is an important occupation in many parts of these states.

The principal kinds of farming

There are large fruit orchards in several of these states. For example, apples (Fig. 78), peaches, pears, plums, and grapes

are grown in western New York and Pennsylvania and in southern New Jersey and Maryland, where the climate is made mild by the waters near by. Tobacco, also, flourishes in the lower Connecticut Valley, in Massachusetts and in Connecticut. But there are two kinds of farming that are especially common.

One of these is truck farming. In so rough a country large cultivated fields are impossible; the land is cut up into small fields, with patches of woodland here and there.

1. Truck farming

Many of these fields, however, are very fertile, and the most common products are those fruits and vegetables that find a ready market in the near-by cities. Some of these are tomatoes, potatoes, lettuce, onions, beans, peas, corn, cabbages, and berries. Growing such food is called *truck farming*. Can you tell how farmers raise some of these things?

Where there are so many great cities, an immense quantity of milk is wanted;



© Keystone View Co., Inc.

Fig. 79. — A dairy farm in New York State

for everyone uses milk in some form. Much of the land is so rocky and rough that it cannot be plowed, and can therefore be used only to raise grass for cattle. For such reasons, *dairying*, or raising milk cows for their milk and products made from milk, is a very great industry in these states.

2. Dairy farming

a. Meaning of a dairy farm

Anyone who travels through these states finds dairy farms a very common sight. The surest sign of a dairy farm is a number of cattle grazing on a hillside or drinking from a brook; and they afford one of the prettiest sights that one gets from a train. On the best farms the cattle look well kept and clean, for they are regularly washed and brushed. Can you tell why they receive so much care?

Fig. 79 shows some of the buildings on such a farm. Tell what you see there. These buildings are very neat indeed; they are ventilated and kept almost as clean as a house.

Besides grass and hay, the farmer

usually grows corn and some turnips or other vegetables for his herd. There is so little hot weather in New England that it is difficult to ripen the corn as fully as it ripens in states farther west. Yet the

Although the land in these states supplies only a small part of the food that is needed there, the ocean furnishes a very large amount of food. Some of the most com-

Importance of sea food and how it is obtained

mon kinds are halibut, cod, mackerel, herring, bluefish, oysters, clams, lobsters, and crabs.

Fish used to be abundant close to shore; but so many have been caught there that fishermen now have to go far out to sea to catch halibut, cod, and mackerel. The vessels used are power boats, driven by gasoline, or sailing vessels called *schooners*; hundreds sail from Boston and Gloucester in Massachusetts every year, and they are often gone for weeks at a time. Can you



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Fig. 80. — Oyster boats at the wharf, Baltimore

green stalks make excellent feed for the cattle when cut up into bits and stored in the round building, called a *silo*, like the one shown in Fig. 79.

Entire trains of milk are a common sight at village railroad stations in these states. This milk may be hauled 200 or even 300 miles before reaching the city for which it is intended. Most of it is *pasteurized*, or heated and then cooled, to keep it from souring. In the cities it is delivered to the houses by milkmen who start out as early as two or three o'clock in the morning. Can you imagine some of the suffering that would follow in the cities if a milk train were wrecked, or if snowstorms should block all trains for two or three days at a time?

b. What is done with the milk

imagine some of the dangers the men meet? Also some of the conversation in their families during a heavy storm on the New England coast?

One of the most interesting industries along the coast is the production of oysters. They are found all along this coast; but Chesapeake Bay produces more than any other section in the world. Baltimore is the center of the oyster trade, just as Boston is one of the chief fish markets of the world.

About one half of the oysters obtained in Chesapeake Bay come from *oyster farms* that are cultivated with as much care as farms on land, although in a very different way. It seems strange to speak of cultivating farms that are entirely under water; but there are thousands

of such farms along our eastern coast; and many of the words used in connection with their cultivation remind one very much of ordinary farming. The young oysters are planted, they have to be fattened, the harvest is spoken of as the crop, and they are sold by the bushel. The oyster farmer starts out to work, however, in a boat, and there are many other differences from farming on land. Can you suggest some of them?

1. How would you make clear to a stranger what a vast number of people there are in New York City? 2. Tell about the size of some of the buildings. 3. Explain what kind of homes the people have. 4. What are some of the difficulties of travel? 5. Describe scenes in New York harbor. 6. Give an idea of the variety of work, and the importance of each kind. 7. Tell how freight and passengers are carried in the city and about the harbor. 8. Explain the advantage of the location of New York. 9. The excellence of its harbor. 10. The ease of traffic with the country on the west. 11. What kinds of manufacturing are especially important in New York City? 12. Name large cities west and southwest of New York, and compare them with that city. 13. How does Boston compare with New York in its advantages for transportation? 14. Locate two large cities in the interior and explain their importance. 15. How do these great cities all resemble New York? 16. What signs of coal are seen by the traveler in Pennsylvania? 17. What kinds of coal are mined there, and how do they compare in quantity? 18. How does the coal compare with other fuel and with water power in im-

portance? 19. State the principal kinds of iron and steel goods manufactured in Pennsylvania and the states near it, and give the reason. 20. How are the iron and steel manufactures of New England different from those of Pennsylvania? Why? 21. Why are cotton, woolen, and leather manufactures especially important in New England? 22. Mention some of the attractions of Washington. 23. Explain the difficulties in the way of farming in the Northeastern States. Describe the surface of this section. 24. State the importance of truck farming. 25. Of the dairy industry. 26. Describe a dairy farm as fully as you can. 27. What is done with the milk? 28. Show the importance of fishing along our northeastern coast.

1. Many visitors go to the top of the Woolworth Building. Describe some of the views that you think you would have there. 2. Make a drawing of this part of the Atlantic coast, showing the principal harbors. 3. How can a canal be kept full of water where the land is not level? 4. Make a drawing of the New York State Barge Canal and include the principal cities along it. 5. Visit a fish market to see some of the kinds of fish mentioned in the text. 6. Make a list of the names in Fig. 66 that begin with *New*. How can you explain such frequent use of this word? 7. Write the short form, or *abbreviation*, for each of the states in this group. 8. Try this game: With scissors cut out pieces of paper—without looking at the map—as nearly the shape of each state as possible; then see if other persons can recognize the states you have tried to represent.

Review
questions

Suggestions
for extra
work

III. THE NORTH CENTRAL STATES



© Ewing Galloway

Fig. 81. — Great Lakes steamers at Cleveland

Some of the finest steamers in the world are found on the Great Lakes (Fig. 86).

A lake voyage
from Buffalo
to Duluth
or Chicago

1. What one
may see in
Buffalo harbor

Their starting point for the westward voyage is Buffalo. Possibly they would start at Oswego or at some other port on Lake Ontario, if that lake were not so much lower than Lake Erie. But the waters of the Niagara River descend 327 feet in passing from one lake to the other; and no vessel could possibly pass through the rapids of that short river, to say nothing of the Niagara Falls themselves. As Fig. 86 shows, the Welland Canal connects these two lakes. Its locks, however, which work as Fig. 84 shows you, are too small for large vessels.

At Buffalo, goods which reach that city by water from the North Central and the Western States must be transferred from lake vessels to trains or canal boats for their eastward journey. On the other hand, goods which are to be car-

ried from the Northeastern States to sections farther west by lake steamers are transferred from trains or canal boats at Buffalo. Many railroads (Fig. 150) also carry even more goods and people between the East and the Great Lakes region than do the waterways.

Thus the harbor of Buffalo is a busy place. Some vessels are loading coal from Pennsylvania and manufactured goods of many sorts. Others are unloading lumber, or iron ore for the great iron and steel mills in near-by cities. Still others are standing beside tall grain elevators, where hundreds of small buckets attached to belts lift their wheat or corn or oats or rye or barley to enormous bins; from these it is later dropped into railroad cars or canal boats. On our voyage westward we shall find where these products have come from.

The voyage to Cleveland takes ten or twelve hours. There again many boats are seen; and many more are unloading iron ore than at Buffalo. The iron and steel mills at Youngstown, Pittsburgh, and other cities near by obtain most of their ore by way of Cleveland and other ports near it. A half dozen electric hoists may be working at one time, lifting the ore out so rapidly that an enormous boat carrying from 10,000 to 12,000 tons is emptied in from ten to fifteen hours (Fig. 82).

2. What one
may see at
Cleveland

Near by are coal docks where coal from Pennsylvania, West Virginia, Kentucky, and Ohio is being loaded into boats to be carried westward. Many kinds of machines are used for handling the coal. One of them unloads a whole carload in about a minute. It lifts the car thirty or more feet and turns it over, dumping the coal into a chute which leads into the boat. What reasons do you see for so much speed?

During some portions of the voyage we may lose sight of land; but before Detroit is reached the vessel enters the Detroit River, which is only a half mile wide.

3. Facts of interest about Detroit

This is one of the busiest streams in the world. One boat on the average passes through this river every few minutes, day and night, during the season of navigation from May to November. The part of Canada just north of Lake Erie is densely populated, and important railways between Toronto and Chicago go under the river here through a tunnel.



By courtesy of Packard Automobile Co.

Fig. 83. — Assembling an engine at a Detroit automobile factory

In this well-lighted room the engines that are being put together are moved along a track and each workman adds the part which is his special work. In this way all the engines are made exactly alike.

If you have time to stop at the lake cities, you can see what becomes of the iron ore that comes down the lakes. Cleveland, the fifth city in size in the country, and Youngstown, like Pittsburgh, use vast quantities of iron in the manufacture of machinery, pipes, automobiles, and a great variety of other things. Detroit is noted for the manufacture of automobiles (Figs. 82 and 83). Chiefly because of this industry, it is now the fourth largest city in the United States.



By courtesy of the Ford Motor Co.

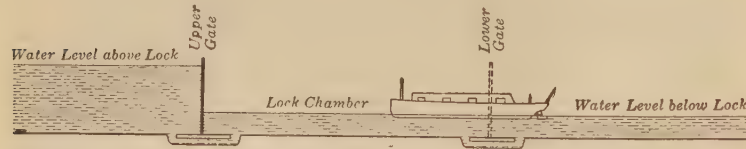
Fig. 82. — A great automobile factory at Detroit

On the voyage north you have Bay City and Saginaw, at the head of Saginaw Bay, on your left, and you finally pass Alpena. Forty years ago this part of Michigan was thickly wooded, and these towns were noted centers for lumber. The numerous rivers that empty into

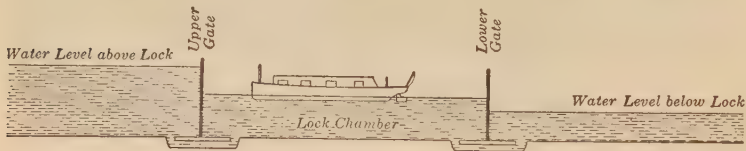
4. How the country west of Lake Huron has changed

furniture is sold extensively in New York as well as Chicago, and even in Europe and South America. The industry was started when hardwood forests near by were extensive and has continued to grow because of this early start although now a large part of the lumber must be brought from other regions.

Although there is still valuable maple, beech, and birch timber in Michigan, the greatest forests have been destroyed. For a long time dead trees and stumps were the most prominent objects. The houses, made of logs or of rough boards covered with tar paper, stood in little clearings surrounded by these sad reminders of the past. Now, however, this is becoming a farming region. Potatoes and other vegetables, grain, and cattle are raised here. In such places life is likely to be lonely; schools are sometimes far apart; and



A. The lower gate is here swung aside, and the boat is entering the chamber.



B. The lower gate is here closed and water is entering the chamber and lifting the boat.



C. The water in the chamber is now on the same level as the water above the lock. The upper gate has been swung aside, and the boat can move out of the chamber.

Fig. 84. — How locks work

Saginaw Bay brought down logs to scores of sawmills there; if you could have gone there at that time, you might have witnessed many exciting scenes in the woods and on the rivers. Can you describe some of them?

Lumber was shipped from this region to many Eastern cities; and many industries which use lumber sprang up here. For example, southwest of Saginaw is Grand Rapids, which became the greatest center for the manufacture of furniture in the United States, and still holds that rank. Grand Rapids

there are not many paved highways. Yet the grandparents of many of our boys and girls had fewer advantages when they "went West."

Fig. 86 shows that Lake Huron is twenty-three feet lower than Lake Superior. St. Mary's River, which connects the two lakes, is very shallow in places, especially at St. Mary's Falls. Canals are the only means by which our large steamers can get past the falls; and the traffic is so great that there are now four canals on the American side and one on

5. What one may see at the Soo Canals

the Canadian. The five together are known as the Soo Canals. They are kept busy, day and night, from the spring thaw to late in the fall.

A day spent in watching the vessels go through the canals is full of interest. One soon learns how the locks lift the boats on their way "up lake," or lower them on their way "down lake" (Fig. 84). The ease with which they work is wonderful; the turn of a wheel or the movement of a lever controls the electricity by which the gates are moved and the water that raises or lowers the vessels is let in or out.

Perhaps of more interest are the boats themselves and the freight they carry. The "down lake" boats contain mainly iron ore, grain, lumber, and copper. The "up lake" boats are loaded with coal, dry goods, groceries, house furnishings, clothing, machinery, automobiles, radios, and other manufactured articles. Notice that goods of more different kinds go west than east. Can you see the reason for this?

Now we can begin to discover where some of the things have come from that we have been passing all along the route from Buffalo.

Some of the iron ore is shipped from Marquette, which you can find in Fig. 86. Beyond this city we come to a peninsula that is noted for copper. In what state is this peninsula, and what is its name (Fig. 86)? A waterway, partly natural

and partly a canal, allows our steamer to cross it instead of going around; and this is the more interesting route, for at some of the stopping places one is likely to see great piles of copper bars upon the piers ready for shipment eastward. Can you tell some of the uses of copper? What towns do you find on the peninsula (Fig. 86)? The chief occupation in these towns is copper mining.

The end of the voyage is reached at Duluth or Superior. The two cities are so near together that they might well be one; yet they are in separate states. Name the states.

7. What a visitor would see in and about Duluth and Superior

Here is where most of the boats were loaded that we have passed day after day on this westward trip. There is still much timber west of the lake and there are several sawmills in these cities. Still farther west the chief product is wheat; these two cities are the nearest points for shipping it east by water. The



Fig. 85.—An open-pit iron mine in Minnesota

The railroad tracks that you see are moved from time to time as the sides of the pit are cut away.

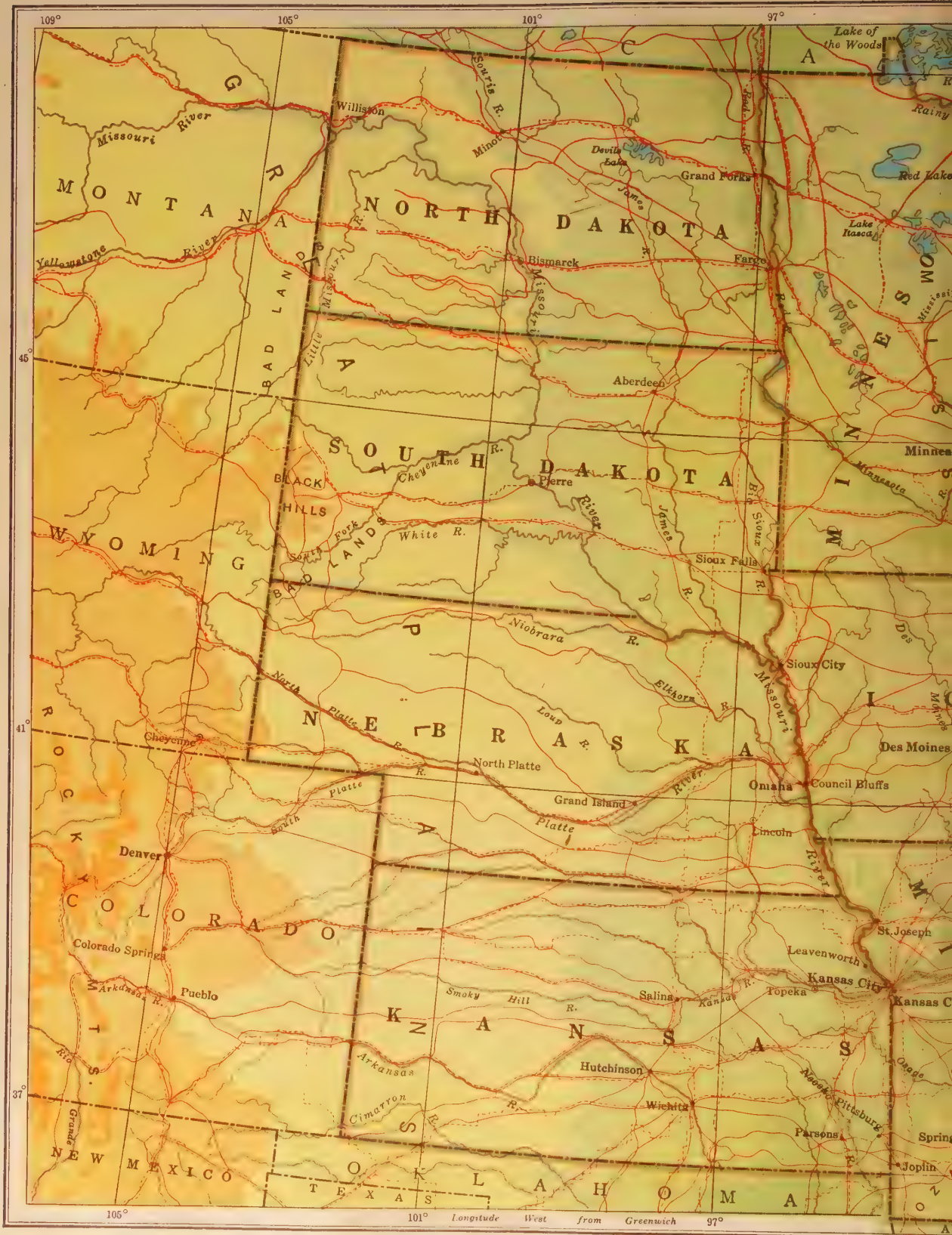


Fig. 86

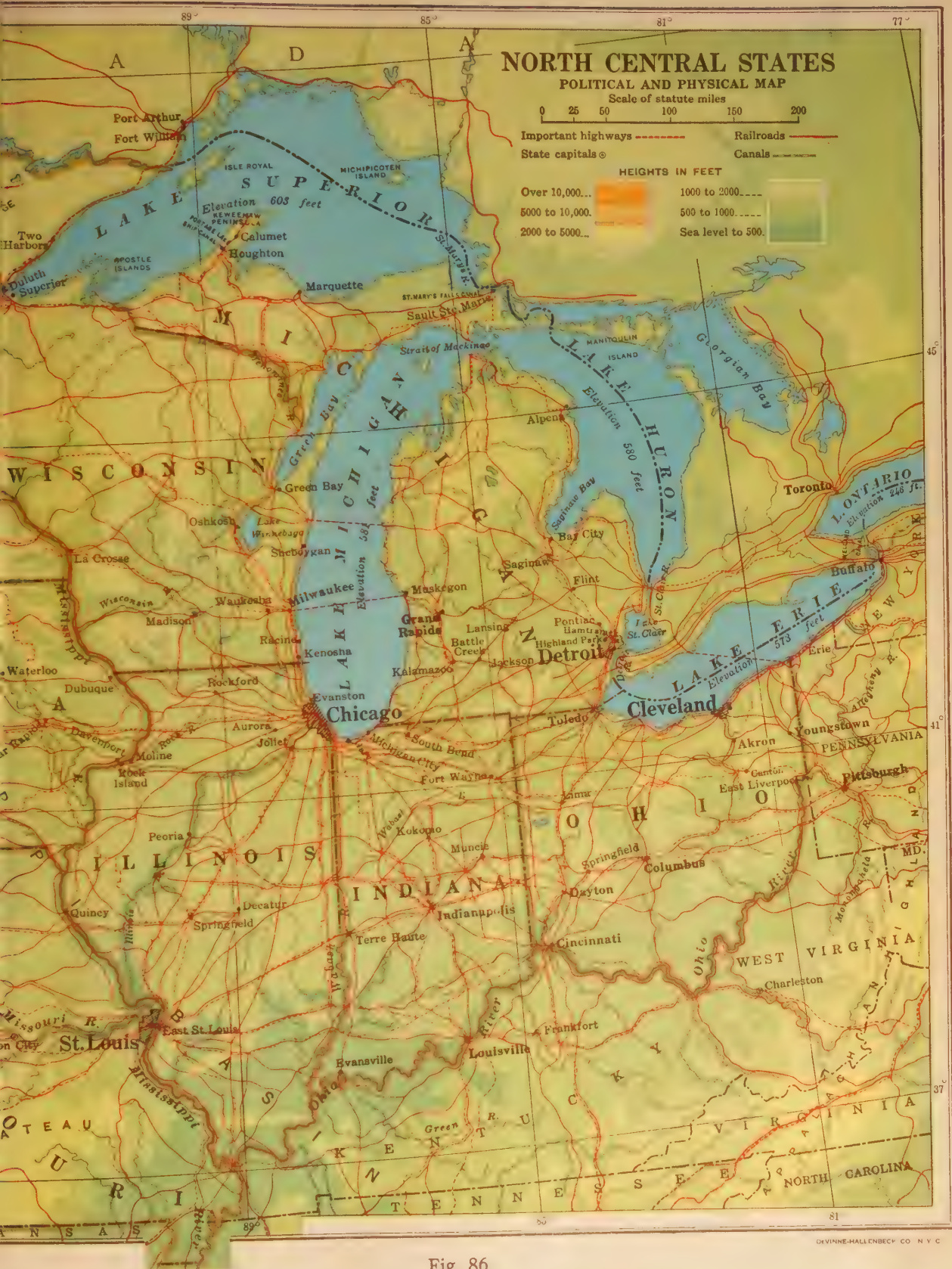


Fig. 86

elevators should be visited, for they are among the largest in the world.

The thing of greatest interest, however, is the iron ore. Most of this ore, which is so important for the manufactures of the



Fig. 87.—One of the many coal docks at Duluth

Coal is brought by lake vessels from Lake Erie ports to Duluth. Here it is unloaded by means of the “clam-shells” shown in the picture, each of which can scoop up five tons or more of coal at a load. Try to explain how these work. Railroads carry the coal from these docks to Minnesota and the Dakotas.

Northeastern and North Central states, comes from mines south and west of Lake Superior. The most valuable mines of all are northwest of Duluth near Hibbing and Virginia. They are even more important than those near Marquette.

Much of the ore comes from open pits where enormous scoops lift five to ten tons at a time into cars that carry it to Duluth, Superior, or Two Harbors for shipment (Fig. 86). The trains run out on high trestles and drop their ore into great bins or pockets, from which large pipes or chutes let it fall into the holds of vessels. What would happen to the East if the iron mines about Lake Superior stopped producing ore? What city would suffer most?

The articles which our boat has brought

west are unloaded at Duluth and Superior. The most important is coal. No coal is mined within hundreds of miles of these cities; yet, as the winters are very cold, a vast amount is needed. The coal docks are as interesting to visit as the ore docks. What becomes of the furniture, clothing, automobiles, radios, and other manufactured articles?

The distance from the Soo Canals to Chicago is about the same as that to Duluth, but the things that interest one on the way are very different. If we travel southward near the east shore

8. The voyage southward from the Soo Canals to Chicago

of Lake Michigan, we see hundreds of houses built on high hills of sand called *sand dunes*. These dunes have been formed by the winds blowing sand up from the beach. They make cool places for summer homes.

In the ports along the east shore great quantities of fruit are found any day during summer and fall; there are berries, peaches, apples, and grapes, each in its own season. West winds blowing across Lake Michigan save the trees, vines, and bushes from frosts in the late spring and early fall. One is likely to see, also, some of the Grand Rapids furniture which, like the fruit, is on its way to Chicago markets.

Along the west shore there are fewer summer resorts and less fruit is grown. Why? There are, however, several manufacturing cities here.

When we have come as far as Milwaukee, we see large boats traveling east or west across the lake carrying freight cars. The east-bound cars are likely to be filled with corn, oats, flour, and farm machinery, which are taken across the lake for

their further trip by rail. The west-bound cars are likely to be filled with manufactured goods from the East. What reasons can you see why such goods should take these routes? Why do you suppose they are carried across the lake in freight cars rather than in vessels in the usual way?

Long before the harbor of Chicago is reached, the buildings of the city can be seen. Chicago extends for nearly thirty miles along the shore, and smaller cities to the north and south increase the stretch of buildings to fifty miles.

We have seen several large cities on this voyage. What are their names? Locate each on Fig. 86. Chicago is nearly as large as all of them together; and as we approach the city we wonder why so many more people have gathered here than in any of the other places we have visited.

Each of these cities enjoys transportation on the

Great Lakes, but Chicago has great advantages over them all. Fig. 61 shows that Lake Michigan extends far south toward the heart of the United States. East and northeast of the southern end of the lake are many states, including Indiana, Michigan, Ohio, Pennsylvania, New York, New Jersey, and all the New England states. West and northwest of the lake is about one fifth of the entire area of the United States. Name the states

there. Both people and freight going by land from one of these sections to the other must pass around the end of the lake. These two parts of our country contain a large part of our population and wealth; and since railroads are built where they will serve the largest numbers of people who can afford to use them, a large number of railroads must follow this route. Thus you can see that there is reason for a large city somewhere in this neighborhood.

The Chicago River, a little to the northwest of the southern tip of the lake, fixes the exact location, because its mouth forms a small but good harbor (Fig. 89). That is where Chicago began, and it has kept growing as more and more railroads have reached it. There are now thirty-four of them; and their total length is one half that of all the railroads in the United States. Anyone traveling



Photo from Ewing Galloway, N. Y.

Fig. 88. — The Union Station, Chicago

Several of the most important railroads use this splendid station. It took several years to build it. The picture shows only a small part of it.

from one of our coasts to the other may go by way of St. Louis or New Orleans; but he is more likely to go by way of Chicago. Chicago is, indeed, the greatest railway center in the world; trans-



Photo from Underwood and Underwood

Fig. 89. — Skyscrapers beside the Chicago River
Chicago's "sky line" is as striking as New York's.

portation is, therefore, one of the great occupations of the city.

Chicago and St. Louis both enjoy another unusual advantage for transportation; for every railroad that enters either one of these cities ends there. Whether one is traveling east or west or north or south by way of Chicago or St. Louis, one changes cars in order to continue one's journey. On this account, transportation of passengers, baggage, and freight is an important occupation in both these cities. This is especially true

of Chicago, for in that city the railroads end at different stations, and people and goods must be carried from one to another. In St. Louis the railroads come together at one station.

These remarkable advantages for transportation naturally make Chicago a large manufacturing center. But there are other reasons for manufacturing here. We have seen that there are valuable copper mines and some of the richest iron mines in the world near Lake Superior; and the lakes make it possible to transport these products at small cost to Chicago and near-by cities.

Cheap coal is another advantage. There are large deposits of soft coal in Illinois, where nearly half as much soft coal is mined as in Pennsylvania; and Kentucky, which mines nearly as much as Illinois, is not far away (Fig. 86).

Although an enormous amount of iron and steel is made near Chicago, little of this work is done in the city itself. Looking southeast from the harbor on a dark night one can see a great glow as if a volcano were in eruption. The light is caused by the steel mills at South Chicago and at Gary in Indiana, though the latter city is thirty miles away. Great quantities of iron and steel are used in manufactures in Chicago itself; the Pullman passenger and sleeping cars are made there, and a large share of the farm machinery of the world, besides many other kinds of metal objects.

Another reason for the wonderful growth of Chicago is its location in the midst of one of the largest and most fertile farming regions in the world. Grain is the leading product. The city

2. Advantages
of its location
for iron and
steel manu-
facture

stands on the northern edge of the Corn Belt, which extends from central Ohio to eastern Nebraska and South Dakota. The principal crop northwest and southwest of this belt is wheat; and much wheat is raised in the Corn Belt also. Other grains that are grown in this section are oats and rye. As a result, more grain is bought and sold in Chicago than anywhere else in the world.

Where large quantities of corn are grown, cattle and hogs are common; for corn is the feed that fattens both. For this reason, Chicago is the greatest market in the world for live stock. Many

the shipment of goods; and they have an important advantage over the lakes, because they flow through the heart of the country, while the lakes are on its northern edge. On Fig. 86 trace the Mississippi River from its source to southern Illinois. What states does it border? What states does the Missouri River cross or border? The Ohio River?

Many important cities grew up on these rivers when river transportation was more important than it is now. The largest of these was St. Louis. Its location on the Mississippi near the mouths of the

How the leading river cities compare in size with those on the lakes



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Fig. 90. — Steel mills at Gary

In which buildings is the steel made? Which are office buildings? In which buildings do you think some of the officials live?

trainloads of cattle, hogs, and sheep arrive there every day. Most of the animals are slaughtered at the Union Stockyards; for Chicago is likewise the greatest center for preparing meat and manufacturing meat products, or, as we say, *meat packing*.

The great rivers in these states, as well as the Great Lakes, furnish routes for

Missouri and Ohio rivers connects it by water with points hundreds of miles distant in any one of four directions. On Fig. 61 show what these four directions are, and some of the cities with which St. Louis is thus connected. In spite of this advantage, St. Louis is less than one third as large as Chicago.

Here is a list of the seven largest cities (or pairs of cities) on the Great Lakes from Buffalo westward, and another list of the seven largest cities (or pairs of cities) on the rivers of the North Central States or near-by parts of neighboring states.

Which of these groups has the larger cities? The first, of course. Let us see why. The chief disadvantage of the river cities is the fact that they are not well situated for making iron and steel. All the cities in the first group have cheap



Fig. 91. — Upper dam, Falls of St. Anthony

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Where streams are dammed to produce power, it is not the water that flows over the dam that is used, but water that flows swiftly through pipes from a higher level to a lower at one side of the dam. This falling water is used to turn wheels that make, or *generate*, electricity.

LAKE CITIES	POPULATION (1920)
Chicago	2,702,000
Detroit	994,000
Cleveland	797,000
Buffalo	507,000
Milwaukee	457,000
Toledo	243,000
Duluth; Superior	118,000
	<u>5,818,000</u>

RIVER CITIES	POPULATION (1920)
St. Louis	773,000
Minneapolis; St. Paul	616,000
Pittsburgh	588,000
Kansas City, Missouri; Kansas City, Kansas	425,000
Cincinnati	401,000
Louisville	235,000
Omaha	192,000
	<u>3,230,000</u>

coal; some of the cities in the second group have to pay high prices for coal. Which (Figs. 86 and 149)? The great supply of cheap iron ore which the lake cities have because of the low cost of lake transportation, has led to enormous manufactures of metal goods. It is much more expensive to haul the iron ore from the mines to the river cities by train, or by train and river steamer. Therefore little iron and steel manufacturing is done in the river cities. The only large river city in the North Central States that is noted for the manufacture of iron and steel goods is Cincinnati.

The chief disadvantage of the river cities

In the Northeastern States the farms produce fewer raw materials for manufacture than those of the North Central States; and the foods that they supply, such as milk, butter, vegetables, and fruits, meet only a small part of the needs of the dense population. In the North Central States, however, the farms not only produce far more food than is needed in those states, but they supply vast quantities of raw materials for manufacture.

Minneapolis, being near one of the greatest wheat sections in the world, has become a great wheat market and flour center. It has enormous elevators for grain, and its flour mills can produce many thousands of barrels of flour each day. St. Paul, beside being a center for distributing dry goods, hardware, shoes, and other articles among the farming sections, has extensive stockyards and packing houses. Minneapolis as a grain market reminds one of Chicago, Milwaukee, and Buffalo. St. Paul, in the importance of its stockyards and meat packing, reminds one of Chicago, Kansas City, Omaha, and Cincinnati. All these cities, and the smaller ones as well, depend much more on the surrounding farm lands than the cities and towns farther east.

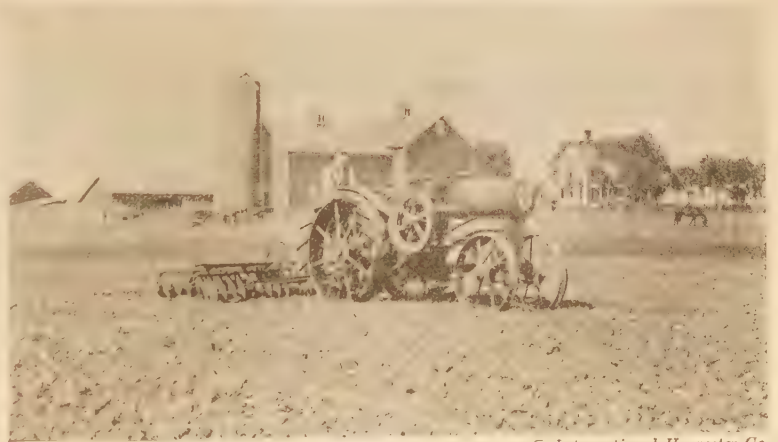
St. Louis, being so far south, differs greatly from the cities farther north. It is an important center for the manufacture of tobacco. Since great numbers of horses are used in the states north of it, and great num-

bers of mules in those to the south, it is an important market for both horses and mules. Wool and hides from the sheep and cattle ranches of the West reach the city in large quantities; so it is an important center for wool and for the manufacture of shoes. It is also a great center for meat packing.

The importance of the farms for the growth of the cities is perhaps best shown in the cases of Indianapolis, in Indiana; Columbus, in Ohio; and Des Moines, in Iowa. Locate these cities. No one of them has the advantage of water transportation on a large lake or river; their growth has largely depended on the surrounding land and transportation by railroads. Yet they have thrived wonderfully, and two of them are the largest cities in their states. Which are they (Appendix)?

The surface of the North Central States is very different in appearance from that of the Northeastern States. In traveling from Boston to Pittsburgh one is struck by the number of hills and moun-

Difference in appearance of this region from that to the northeast



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Fig. 92. — A farm home in the North Central States

Homes like this one are common in these states. Many barns and sheds are necessary to store the feed for the live stock during the long winters. The tower-like building is a silo where green fodder is stored.

tains, by the winding roads, beautiful valleys, and extensive forests, and by the quantity of land that is not cultivated. In New England many of the farms are so strewn with boulders that ploughing is next to impossible; and often where the

1. The difference in the surface



Fig. 93. — A wheat field in Kansas

The only trees are along the banks of streams. Why?

surface is cleared of rock, the soil is too shallow for successful farming. In New York and New Jersey, to be sure, there are many fertile farms. In Pennsylvania too there is much fine farm land; but in traveling by rail from Philadelphia to Pittsburgh one also sees many high hills, passes through one deep cut and tunnel after another, goes around a great horse-shoe curve to reach the top of the Allegheny Plateau, and then follows deeply carved river valleys.

As one proceeds westward from Pittsburgh the scene changes. Within the first hundred miles the high hills nearly disappear; and beyond central Ohio one rarely sees a hill. For hundreds of miles the land is nearly as level as a floor. There are many patches of timber in Ohio and Indiana; then, in Illinois and Iowa, come the *prairies*, and beyond them the *Great*

Plains. In both the prairie and Great Plains regions there are few trees except along streams. It is quite possible that there are some children on the Great Plains old enough to be going to school who have never seen a patch of woods.

West of Indiana no boulders are likely to be seen in the fields, and on many farms a careful search would not discover pebbles large enough for a sling-shot. The soil in most places is so deep that bed rock is not struck even in digging deep wells; and it is also very fertile. No wonder that many men abandoned their farms in New England, in order to farm in these states!

The crops, also, are very different in appearance from those in the Northeast. The best time to see them is, perhaps, toward the end of June, when they are not yet of full height. Beginning in western Ohio, corn is especially common; and it is just as common all the way to eastern Nebraska, occupying nearly one half of all the land in this belt. Because there is so much of it, this region is called the *Corn Belt* (Fig. 147).

2. The difference in the appearance of the farms

The wheat section partly overlaps the Corn Belt but extends farther west into North and South Dakota, Minnesota, Nebraska, and Kansas (Fig. 148). In the states just named many of the farmers raise little else. Wheat is so important that, if it were to fail for one year, not only the inhabitants of the United States but those of Europe as well might suffer seriously for bread.

Roads are usually straight in these states, because they do not have to wind between hills; and there is little waste land. To many persons much of this country seems flat and tiresome and they do not care to go touring here because "there is nothing to see." But to others the black, fertile soil, the broad green pastures with their grazing cattle, sheep, and horses, and the fields of waving grain are wonderfully attractive. They enjoy these sights not only on account of their beauty, but because of the prosperity they suggest.

The area of these states is much larger than that of the Northeastern group, since they extend about 1,200 miles east and west and 800 miles north and south. The rain for this whole region comes almost entirely from the Gulf of Mexico. This shows how important the winds are, since they carry all this water.

Fig. 146 shows the section that has the heaviest rainfall. What states are included in it, and how many inches fall there each year? Note how the fall decreases toward the north and west. Point out the sections that have less than twenty inches per year. That is too little for ordinary farming. Do you know what use is made of the land in such areas?

There is a greater variety of farms in these states than in the Northeastern group. The newly cleared

lands near Lake Huron that are still covered with tree stumps, are one kind (p. 86). On the western border, where the rainfall is less than twenty inches, grass is the principal crop, because there is too little rain for other products. Here the farms, or *ranches* as they are usually called, often contain many hundreds of acres, because the grass is not heavy in so dry a climate, and a large area is required to feed a herd of cattle or sheep.

The farmhouses, therefore, are widely scattered, often being located near springs or along streams, where water can easily be obtained. Life is lonely in such places, and some of the most common comforts are little known. Yet it is a very important work that these people are doing, for they help to supply our tables with meat, besides producing hides for leather, and wool for clothing.

In a region where there are so many

The many kinds of farms in these states



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Fig. 94. — Harvesting on a large farm

Not much machinery is needed for truck farming. On the larger farms, however, where many acres are devoted to a single crop, farm machinery is very important. The machine on the right is cutting the green fodder. That in the center is raking it into a long *windrow*. The machine on the left is loading it on to a wagon.

large cities as in the southeastern portion of these states, truck farming can be expected, as in the Northeastern States. Dairying also flourishes in many places, but particularly in eastern Wisconsin and northern Illinois. Can you see any reason for its importance here?

The most common kind of farm, however, is that on which several kinds of grain and vegetables are raised, as well as live stock and possibly fruit, and where the farmer does not depend mainly upon any one product for his income. This is sometimes called *mixed farming*.

A certain farm in central Ohio contains 160 acres, which is considerably larger than the average in that state.

How mixed farming is usually carried on

1. Appearance of a certain farm in Ohio

Upon it is a farmhouse, with a barn near by for horses, cows, and hay. There is another barn close to it for feeding stock. A silo stands between the two barns; and there are some sheds between the house and the barns for storing grain and farm implements.

A windmill behind the house pumps cold water to the milk shed and also fills the water-troughs in the barnyard. On one side of the house is an orchard of apple, peach, and pear trees, with a few rows of berry bushes in one corner; and there is a chicken house in another part, in which enough chickens are raised to supply some meat and all the eggs that are needed by the family, with some to sell.

On the side of the house next to the orchard are a few beehives, and back of the milk house, between the orchard and the barns, is a good-sized garden. Beyond that are several pig pens, in which pigs are fattened for home use and for the market.

Farther away from the house are fields in which there are at least three or four different kinds of crops. Every farmer in this neighborhood expects to raise corn, perhaps sixty acres of it on a farm of this size; some grass for grazing and for hay; and wheat or oats. The part of the farm farthest from the house is a wood lot which contains oak and maple trees from which firewood is obtained.

The busiest time for work is from spring until fall. As soon as the frost is out of the ground the farmer and one or two men who help him begin plowing the ground.

2. The work of the grown people on this farm

Then comes the planting, and later the tending of the crops, to kill the weeds and keep the soil in good condition. Finally the harvesting follows, from July to late fall, the corn being one of the last crops to be gathered. There are three or four cows, which must be milked night and morning and which supply the family with fresh milk and cream. Now and then the garden must receive attention, the apples must be gathered, the harness must be mended, and many other little things must be done.

Meanwhile the women do the house work, separate the cream from the milk with a machine called a *separator*, look after the chickens, pick berries and can fruit, and work in the vegetable and the flower gardens.

While the winter is the easiest season for the farmer, there are still many regular duties. The cows must still be attended to, the horses fed, and other live stock cared for. On this farm most of the crops are fed to cattle during the winter, because it pays better to fatten stock with the corn than to sell it.



DEVINNE-HALLENBECK CO., N. Y. C.

Harvesting corn in the Middle West

Life on this farm is much more pleasant than it formerly was; it used to be very lonesome, because there were only a few houses in sight and it was two miles to town; and the work for both the men and women was harder. But recent years have brought many improvements. The mail is now delivered every day; there is a telephone in the house; there is a radio; and an automobile makes it much easier to visit neighbors or distant friends and to go to town.

There is a bathroom in the house, running water being provided by a pump run by electricity. Electric lights have taken the place of lamps; even the barn is lighted by electricity, so that the farmer no longer needs to carry a lantern at night. The cream separator is run by electricity and a vacuum cleaner takes the place of the old style broom.

Many modern machines for plowing, fertilizing, and harvesting have made the farmer's work much easier. Some of the time that he formerly gave to hard physical work he now gives to study, for it requires more knowledge and thought to farm now than it used to. This makes the work far more interesting. It requires much intelligence to select the proper fertilizer, to change or *rotate* crops so as not to exhaust the soil, to keep live stock well and to fatten them without too great expense, and to keep machines in good running order. For this reason the farmer reads papers and books on agriculture and now and then attends a course of lectures on some farm subject.

During recent years a girl has been the only child upon this farm. The things she does suggest many of those that are done by any country boy or girl.

There is a fairly good school only a half mile distant, which she attends; and mornings and evenings she helps with the housework.

3. What boys and girls do on this farm

She goes to town two or three times a week, and often rides horseback, since she has a horse that she helps take care of and may use at any time. She has her own vegetable and flower garden, where she spends a good deal of time, partly because she likes to work with plants. Now and then she drives a team while the hay is being loaded; she picks berries or apples in the orchard; she gathers the eggs, drives the cows to and from pasture, looks after some of the lambs or calves, feeds the chickens, and does a score of other things indoors and out. Most of these tasks she enjoys.

She sometimes plays with the neighbors' children; but she has a dog of her own, usually five or six cats or kittens, a few pet chickens, and her horse, and she cares more for these animals than for other children or even for the motion pictures in town. She has some relatives in New York City whom she has often visited; but she feels sorry for anyone who must live in a city, because there are so few things that one can do there.

1. Why is Buffalo rather than some port on Lake Ontario the starting point for westbound lake vessels?

Review questions

2. Mention some of the things that you would expect to see in Buffalo harbor. 3. At Cleveland. 4. State some facts of interest about Detroit. 5. How has the country west of Lake Huron changed in recent years? 6. Explain the importance of the Soo Canals, and what one might see there. 7. Locate the mines

on the south shore of Lake Superior. 8. What things in and about Duluth and Superior would interest a visitor? 9. Describe the voyage from the Soo Canals to Chicago. 10. What advantages has Chicago for transportation of goods? 11. How is its location favorable for iron and steel manufacture? 12. For manufacturing and shipping farm products? 13. Compare the leading river cities in size with those on the Great Lakes. 14. What is the chief disadvantage of the river cities? 15. Explain the dependence of these cities upon the farms. 16. How does this country differ in appearance from the Northeastern States? 17. State differences in the appearance of the farms. 18. Where does the rain for these states come from, and how is it distributed? 19. Discuss the variety of farms in these states. 20. Describe the appearance of the farm in Ohio. 21. The work of the grown

people on this farm. 22. Name some of the things that boys and girls do on such a farm.

1. Make a sketch of the Great Lakes. 2. Of the principal rivers in these states. 3. The lakes lead eastward to the Atlantic coast, while the rivers lead to the Gulf of Mexico. Which have the advantage in the general direction in which they lead? 4. From what animals do the following products come: beef; mutton; ham; veal; pork; lard; sausage; tallow; wool; leather? 5. Make a drawing of the farm described on p. 98, locating all the things mentioned. 6. Learn the common abbreviations for the names of the states in this group. 7. Here is a question for debate: *Resolved*, that children can have more fun in the country than in the city. 8. One car holds forty tons of iron ore. How many cars would a lake boat fill

Suggestions
for extra
work



Fig. 95. — Threshing wheat

© Hesse

Wheat is commonly threshed in this way except on the largest wheat farms, where a combination harvester and thresher is used.

hat carries 16,000 tons? 9. What advantage, if any, have Chicago and Gary over Pittsburgh for obtaining ore from the Lake Superior district? 10. What disadvantages do you see in the fact that navigation on the Great Lakes is closed from November to May? How can they be partly overcome? 11. Write a composition on the subject: The life story of a loaf of bread. 12. What might

have been the route of the canal connecting the Great Lakes with the Hudson River, if there had been no rapids or falls between Lakes Erie and Ontario? 13. How do farms that you have seen differ from farms in Ohio? 15. See how long a list you can make of articles made of iron. 16. Of copper. 17. How does a farmer obtain drinking water? 18. On Fig. 86 locate the Wheat Belt; the Corn Belt.

IV. THE SOUTHERN STATES

In late fall or early winter a great many Northern people start South for the winter. Some stop in Virginia or North Carolina, or other points a little farther south. Many visit New Orleans or Hot Springs, in

Arkansas. Whole trainloads at a time, however, go straight through to Florida, some stopping at Jacksonville or St. Augustine; but most of them go to places farther on, including Palm Beach and Miami on the east coast, and Tampa and St. Petersburg on the west coast. Find these cities on Fig. 105. Entertaining Northerners is an important business in many parts of Florida during the winter. There are many other Southern resorts also, especially on the Gulf coast.

The objects of such a trip are to escape the cold winter of the North and to enjoy a vacation. Even

in Virginia and North Carolina there is not very much snow, and on the Gulf coast there are many people who have never seen snow. In New Orleans, overcoats are seldom needed, because midwinter there is much like October in the North.

All the outdoor sports that are com-



Underwood and Underwood

Fig. 96. — A winter home in Florida

Coconut trees are seen in the front of the picture. Across the water, at the right, is West Palm Beach (Fig. 105).

mon in summer in the North can, therefore, be enjoyed on the Gulf coast and in Florida throughout the winter. Among them are tennis, golf, boating, bathing, and fishing. Many of the baseball teams



Fig. 97. — Chimney rock in the Southern Appalachian Mountains

The great size of the rock is shown by comparing it with the people at the foot of the stairway in the notch near the center of the picture.

from the North go there in late winter to begin their practice.

There is, however, danger of a short period of cold weather at any time in the winter on the Gulf coast; for cold north winds sometimes reach all the way to the Gulf from the Dakotas. The temperature at such times may not go much below freezing; but it can make people feel very uncomfortable.

These cold spells explain why so many people prefer to go to southern Florida. On the trip South one is likely to feel that

he is almost at the journey's end when Jacksonville is reached. Yet the distance from that city to Miami is half that from Washington to Jacksonville, or between 300 and 400 miles. It never freezes at Miami, and sometimes it is uncomfortably warm in January and February. One can sit out of doors in comfort, and many people spend a great deal of time in the parks and at sports that would be impossible in the North.

One of the most interesting routes from the East to the Pacific coast leads across the South by way of New Orleans. Starting at New York, one passes through the city of Washington, across the state of Virginia, through Atlanta in Georgia, and through Montgomery in Alabama. From New Orleans one goes west through Houston, San Antonio, and El Paso in Texas, on to southern California. Trace this route on Fig. 105.

On such a trip one who lives in the North is likely at first to notice many likenesses between the North and the South. On his right he sees the ridges of the Appalachian Highland for several hundred miles. These are a continuation of the highlands of Pennsylvania; in fact some of the mountains in North Carolina are higher than those in any of the Northeastern States. The country through which the railroad passes here on the way to Atlanta is almost everywhere hilly enough to remind one of the Northeastern States. After that, the surface becomes more level, and from New Orleans to El Paso most of it is as flat as the prairies and Great Plains of the North Central States.

Things of special interest to a Northerner crossing these states

1. Likeness of North and South

If one makes this trip in summer, he will be struck with the likeness between the North and South in crops. Corn will be seen all along the route until western Texas is reached, where there is too little rain for its growth. It covers a smaller portion of the ground than in the Corn Belt, but almost every farmer raises some. It is used more for bread in the South than in the North, and it is eaten in some form or other almost every day. Fields of rye and wheat will be seen, and also such vegetables as are common in the North. In fact, most crops that grow in the North are likely to be seen on this journey also.

Some very important differences, however, will be seen. Soon after entering Virginia, one will be struck with the amount of unused land. There are fine farms here and

Noticeable
differences



© Cook

Fig. 98. — A tobacco field in the Southern States

there with good buildings, and herds of cattle and sheep feeding in rich pastures; but for long distances there are no houses and the ground is covered with forest or underbrush. The same impression is received through much of the journey. In fact, less than a third of all the land in the South is used for farming, while in Illinois and Iowa more than three fourths of the surface is cultivated.

a. The amount
of unused land

b. The tobacco
fields



Office of Farm Management, U. S. Dept. of Agriculture

Fig. 99. — A farm in Virginia

Can you tell from the elevations as they are shown on Fig. 105 whether this farm is in the eastern or in the western part of Virginia?

In southern Virginia, the traveler begins to see tobacco fields, and as he proceeds into North Carolina the number greatly increases. Tobacco is raised in several Northern states, but in no one of them is so much grown as in the region about Durham, in North Carolina. Can you recall some of the advertisements of Durham tobacco that you have seen?

Each tobacco field is

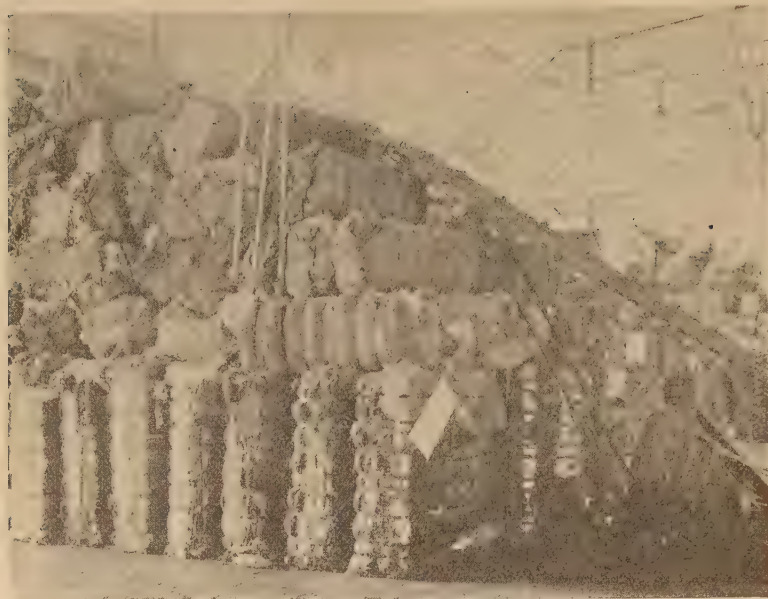


Fig. 100. — Cotton stored for shipment

small, containing usually from two to ten acres. This is because the plant requires much labor and each family cultivates only as much as it can care for alone. But there are so many fields, extending over a distance of 200 miles in Virginia and North Carolina, that one soon finds that tobacco is more of a Southern than a Northern crop.

Shortly after the train passes the tobacco region a kind of plant ^{c. The cotton fields} not seen anywhere in the North begins to appear; and for the next 1,200 miles in our journey we note that it occupies about as large a part of the cultivated land as does corn in the Corn Belt of the North Central States. This is the cotton plant. As in the North, other crops are seen on many farms, but cotton is by far the most common. This region is therefore called the *Cotton Belt*.

Our journey carries us the whole length of the Cotton Belt. Find out from Fig. 101 what states are crossed and in what parts of these states the traveler finds the most cotton.

Two other crops not grown in the North are seen in the neighborhood of New Orleans. One is sugar cane, from which sugar is made; and the other is

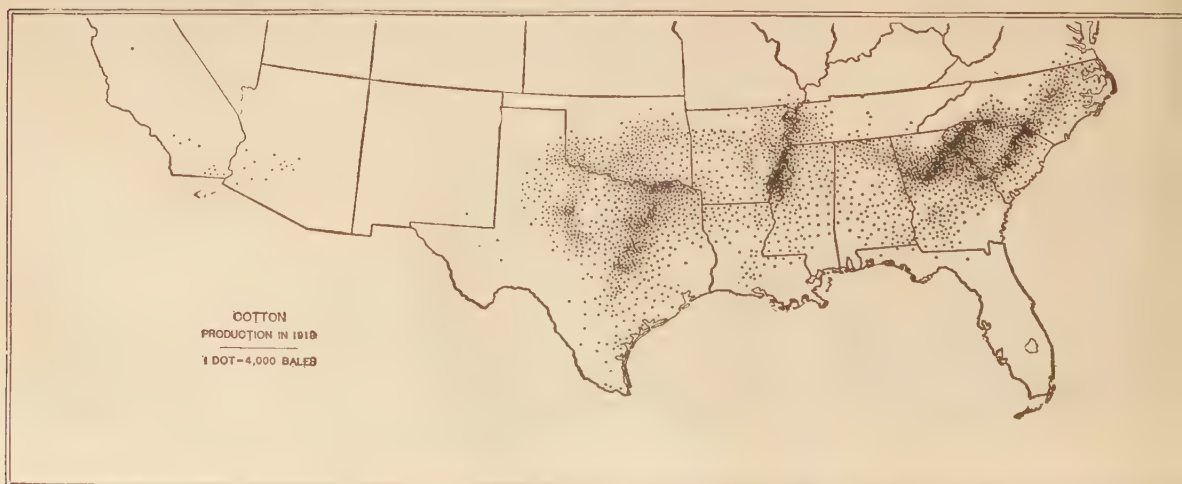


Fig. 101

From The Fourteenth Census of the U. S.

rice. Sugar cane looks like corn, but grows taller and has a thicker stalk; and there is a noticeable difference in

1. The location and appearance of two other crops not grown in the North

color when the plants are small. The cane, however, is injured by frost, and requires nearly a year for full growth. The only place in the United States where much of it is cultivated is on the low, flat lands of the Mississippi delta (Fig. 105), which in winter are protected from cold by the warm, moist winds from the Gulf. The traveler would

find from one third to one half of all the cultivated land in that section planted in sugar cane.

It is the juice of the cane that produces the sugar. This is pressed out of the cane and boiled down in immense sugar factories in Louisiana. The cane in its natural state is so sweet that children may often be seen chewing short pieces that have been cut off from the stalks.

Rice is the principal crop farther west along the coast of Louisiana and Texas, and in parts of Arkansas. The appearance of the fields is very different at different seasons. In the spring they look much like fields of wheat or oats. But rice, after its growth is well started, needs an average of a half an inch of water every day for ninety days; and although the rainfall here is heavy, only about twenty inches fall in that time. Is this more or less than half of what is needed? On this account, the fields must be



Fig. 102. — A rice field in Louisiana

The harvesting of rice is much like that of wheat.

flooded; and, as they are separated from one another by embankments, they have the appearance, for about three months, of many little lakes.

Toward harvest time the ground is allowed to dry out and harden, so that machines may be driven over it. The rice is then harvested in much the same way as wheat or oats.

In one respect, the population of the Southern States differs greatly from that in the North. In traveling in the South one soon finds that negroes form a large part of the population. In some states more than one half of all the inhabitants are negroes.

The South is the part of our country in which there used to be many slaves, because in the South it paid to have much of the work done by negroes. These negroes are the descendants of the slaves. They are good workmen here because

e. Differences seen in the people

they can stand the hot, moist summers better than most white people. Altogether there are about 10,500,000 of them in the United States, of whom nearly 9,000,000 live in the Southern States.



Photo by U. S. Army Service

Fig. 103. — Richmond seen from the air

On what river is Richmond located (Fig. 105)? The business districts of most of our large cities look much alike.

There is, also, a noticeable difference between the North and the South in the number of large cities. In going from New York to Chicago, by way of Buffalo or Pittsburgh, one passes through several great cities. Can you name some of them? On this entire route, however, from Washington to El Paso, the traveler passes through only one very large city—New Orleans. The next largest, located on or near this route, are Richmond, in Virginia (Fig. 103); Atlanta, in Georgia; Birmingham, in Alabama; and Houston and San Antonio, in Texas. Yet only one of these has as many as 200,000 inhabitants. Locate these cities on Fig. 105, and find their populations in the Appendix. What does this small number of large cities tell to you about the amount

f. Difference in the number of large cities

of farming in the South? About the amount of manufacturing?

We have seen that the South grows three valuable crops—cotton, sugar cane, and rice—that cannot be

raised in the North. Citrus fruits are a fourth Southern product. Oranges and lemons are raised in many places along the Gulf coast; but they are entirely safe from frost only in the southern half of Florida. There one finds grove after grove of oranges and grapefruit, with some lemons and limes.

Another advantage in agriculture of the South over the North

Florida is a low, flat country and swampy in many parts. But it has a very large area that is naturally dry enough for orchards of citrus fruits, and many of the swamps are being drained. Some of the trees bear blossoms, green fruit, and ripe fruit all at the same time. As in the orchards in the North, the trees almost break with the weight they carry, and the bright, richly colored ripe fruit is a beautiful sight when seen against the green leaves. The grapefruit are larger than the oranges and grow in clusters somewhat like a bunch of grapes; hence their name.

A few bananas are produced. These are a tropical fruit; but the only tropical plant that is commonly cultivated is the pineapple, so called because it resembles a large pine cone. It grows on a very short stem surrounded by spiny-edged leaves that entirely cover the ground. In looking over a field of pineapples one sees

ly these leaves, and the pineapples themselves from two to four feet above the ground (Fig. 104). Florida produces few lemons; but one third of the oranges and about three fourths of the grapefruit, limes, and pineapples raised in our country come from that state. A large part of the remainder comes from California (p. 140).

The South has still another advantage for farming. Anyone living in a large Northern city has noticed that fresh string beans, lettuce, and radishes can be obtained at some of the stores all winter long; and that new potatoes, fresh peas, asparagus, and strawberries are in the market in March, even before the snow is all gone. Have you wondered how this is possible?

These products come mainly from the distant South. The winters are so warm along the coast, and the sandy soils are warmed so readily, that some of these foods are raised there throughout the winter, and others are planted while it is still cold in the North. For example, in Florida two crops of string beans are usually produced in the winter. One, planted in October, is ready for market in early December; and the other, planted in January, is shipped in early March. All the gardeners in one neighborhood may grow nothing but lettuce, while those in another place may raise only radishes. Thus many truck gardens (p. 81)

in Florida and other Southern districts keep the tables in the North well supplied with vegetables and small fruits through the winter.

The principal markets are in the densely populated Northern states. Later in the season these supplies come from regions not so far away. Then it does not pay to bring them from the more distant Southern sections.

Without fast trains the South and the North could not help each other in this way. Thus we all depend upon one another and upon the work men did before we were born for most of the things that we receive.

While some farms in the South grow only garden truck or sugar cane or rice, mixed farming is common in many districts. A Southern farm of 100 or 200 acres, owned by the man who cultivates it, looks very much like the farms in Ohio. There is a well-built

How Southern farms compare with the one in Ohio described on p. 98



Fig. 104.—Pineapples in Florida

© Brown Bros.

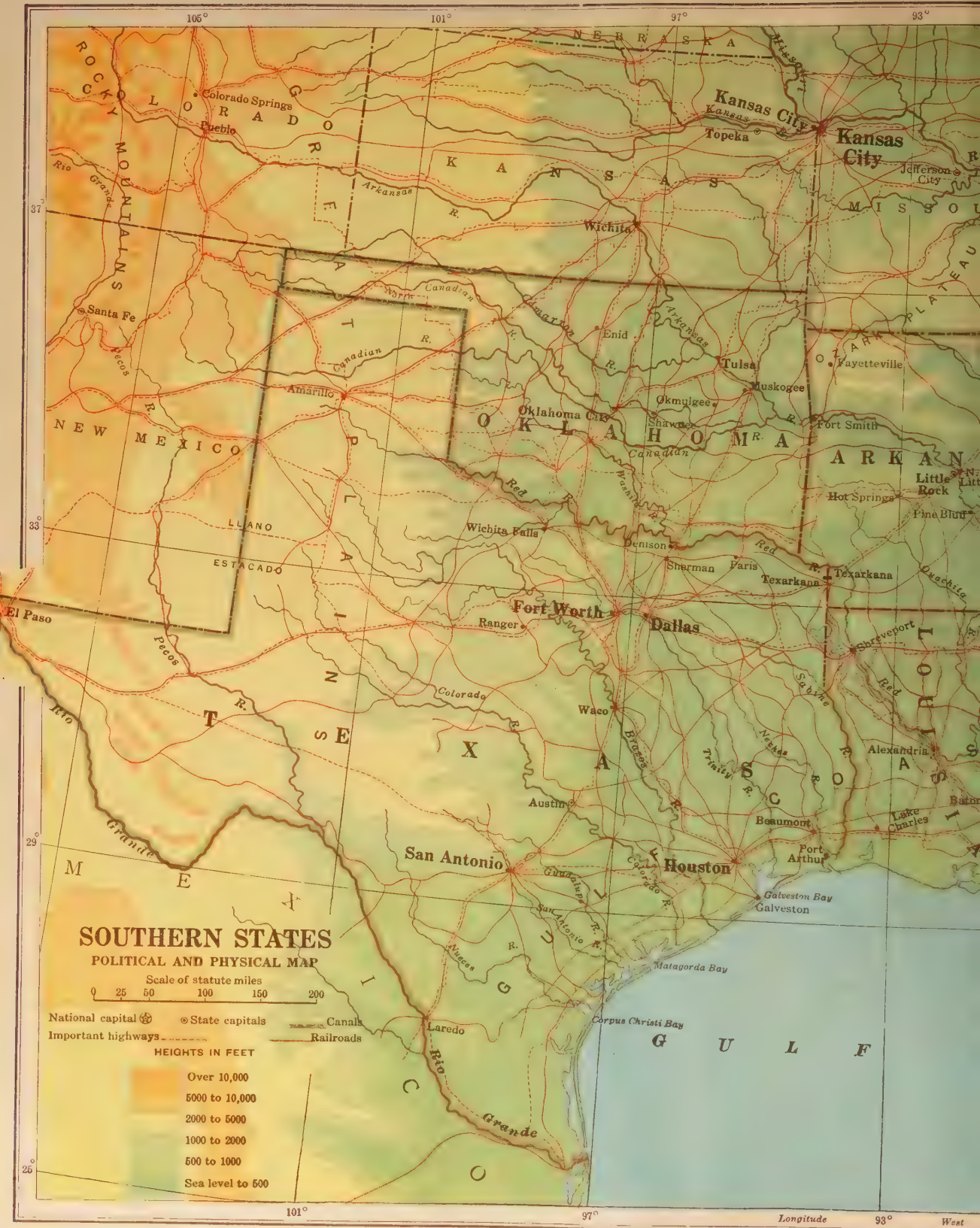


Fig. 105

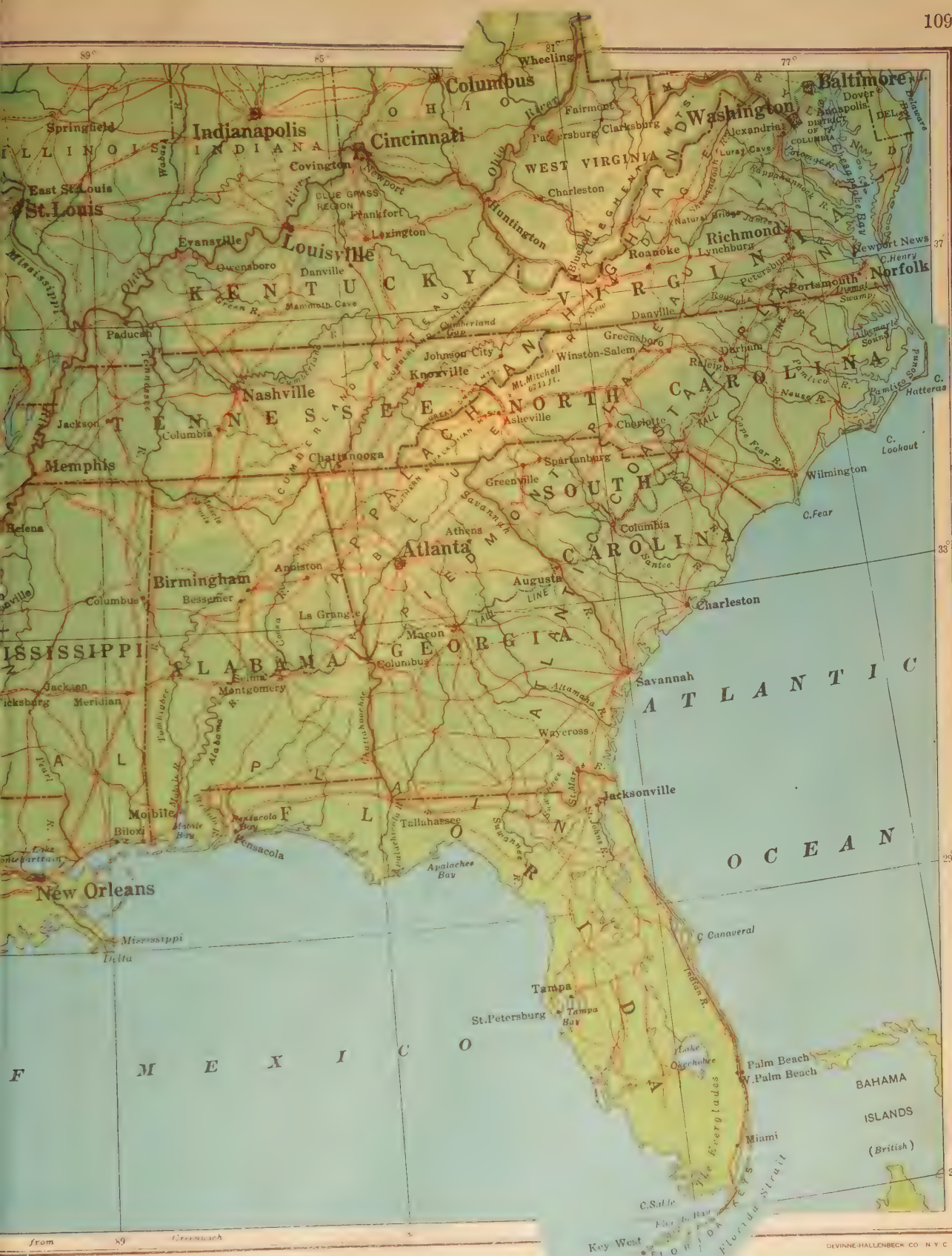


Fig. 105

frame or brick house near the road, with other buildings about it for horses, cows, pigs, chickens, and machinery. There is a garden, where both "Irish" and sweet potatoes are raised, together with cabbages and other vegetables; and there is an orchard.

1. How a small farm compares with that in Ohio

Yet you would see many differences. There are few large barns such as are so common in the North, because the short, mild winters do not make it necessary to store much feed for live stock and there is no need of large buildings in which the stock may be protected. One also sees



Fig. 106. — Cutting hay on a Southern farm

The large number of cattle and horses on farms in the Southern States makes it necessary for the farmers to raise much hay, or forage, for winter feeding. Sudan grass (shown in this picture) is a kind of sorghum and is much liked by cattle. It was first grown in central Africa.

There is also some pasture land, usually some corn, and often fields of wheat and oats.

Life on such farms is much like that on the farm you read about on pp. 98-99. Neighbors are not far away; many farmers have telephones and radios, the mail is delivered every day, and automobiles are common.

patches of tobacco much oftener than in the North; cotton is a very common crop in the South; and in most states a farm is sure to have a field of *sorghum* for making sorghum molasses.

There are also large farms, called *plantations*, which contain several hundreds or even thousands of acres, and which differ much more from the Ohio

farm. Corn and cotton and, in Louisiana, sugar cane are the leading crops upon

2. How a plantation compares with an Ohio farm these, and the people who do the work are mainly negroes.

In many cases the owner lives in the near-by town and has an overseer to look after the work. Oftener, however, he lives in a beautiful home on the plantation.

The portion of the land that the owner does not cultivate is divided into small sections, sometimes called "one-horse" or "two-horse" farms, which are rented by negro farmers. The size of the farm which each negro cultivates depends upon the number of horses he owns and the amount of help he has in his family. A one-horse farm contains about twenty acres, and the family that works it lives in a small cabin. Thus a plantation often has one fine residence and a number of cabins scattered over it. Make a drawing of such a plantation as you understand it.

Life in the hilly and mountainous sections of the South is different from that on the lowland farms and plantations. Note in Fig. 105 how large these sections are, and the states in which

3. Life in the hilly and mountainous sections of the South

they are found. The roads here are often very poor and railroads are few, so that one sees few persons outside of one's own neighborhood. Such a life seems to outsiders to have few attractions. Yet these people love the solitude of the forests and the freedom that they have there; and they would not readily leave their mountain homes for the open plains. It is from such regions as these that the strong people of the world, both in mind and body, have come. Some of the leading men of our nation, past

and present, spent their boyhood days in these mountain regions.

Sixty years ago corn and tobacco were raised in the South, and some hemp.

Sugar cane and rice were also grown, but only in a few sections. But the only crop that was really important was cotton; this was produced in large quantities.

The story of King Cotton

1. How he got his name

In those days, little of the cotton was manufactured in the South; in fact, the Southerners did not want to manufacture. They preferred to give all their attention to the growing of the raw cotton, letting other people do the manufacturing. The money they received from cotton was enough to supply all necessary comforts, and even luxuries.

Much of the manufacturing of the cotton into cloth took place in New England. Much of it, also, was done in old England. In both of those regions scores of factories and thousands of workers were occupied entirely with cotton manufacture; and the principal, indeed almost the only place from which they could obtain the raw material was the South. If for any reason the South could not furnish it, all these people and the many hundreds of thousands of others dependent upon them soon began to suffer.

The Southern people came to realize how important they were in the world. Cotton formed then, as it does now, the greater part of the clothing for both the rich and the poor, in cool climates as well as in warm. People, therefore, had to have it. One day a Southern Congressman at Washington made a speech about cotton, boasting that all the world had to come to the South to buy; and he ended

by declaring proudly that Cotton was King and all the people of the world were his subjects. From that time on, people often spoke of King Cotton.

was asked to try to make a machine that would do this work. He soon produced a machine that separated the fibers from the seed with wonderful ease and speed;

and it could be made so cheaply that it was widely used. This machine became known as the *cotton gin*. The man who invented it was Eli Whitney.

The effect was wonderful. It now paid to give ground to cotton, and hundreds of acres were soon grown where before there had been only one. New land was cultivated; new towns were founded; and new ships were built to carry cotton to New England and to Europe. The South grew by leaps and bounds, all owing to cotton. And it

was Eli Whitney who had helped to make it so powerful.

Most of the world's supply of cotton is grown in the warmer parts of the north temperate zone, in such countries as India and Egypt. Some also is grown in the tropical zone. Although cotton is so necessary and is so widely grown, about one half of all that is produced in the world is grown in the Southern States. Why does King Cotton thus prefer the South to all other regions?

The reason is that he is very particular about where he lives, and the South just suits him. For example, he cannot endure cold; and in order that he may thrive, the growing season must be free from frost for as many as 200 days.



Photo by Russell Brothers

Fig. 107. — Picking cotton in Alabama

Notice that entire families take part in this work.

Southern cotton had not always been a king. He came to America as an unknown immigrant, and for 200 years lived in Southern gardens and on the edges of plantations. His great neighbors Tobacco and Rice hardly noticed him; and he was of little importance the world over in comparison with Flax and Wool.

The difficulty that held him back was the fact that the fibers were so short and clung so tightly to the seed that there was no easy way of getting them off. It was an average day's work for a man to separate a pound or two from the seed. Under such circumstances, it did not pay to allow cotton to occupy much land.

In 1792 an inventor who was visiting on a plantation near Savannah, Georgia,

2. How a stranger made Cotton so powerful

3. Why he established his kingdom in the South

There are still other needs. He demands moderate rain; but he objects to the heavy tropical downpours. Gentle and frequent rains please him best during the growing season, and he does not want heavy beating rains after the pods, or *bolts*, burst open. Also, the soil must be deep and fertile. Partly for the last reason, he keeps away from the low, sandy coast lands in the South. Nor does he like the hills and mountains in western North Carolina and eastern Tennessee, as is suggested in Fig. 101. That map shows what a vast area in our Southern States meets all these conditions, and therefore has been chosen for his kingdom. In all this region he rules supreme.

King Cotton demands hard work of his subjects. Unlike Wheat, he will not permit much use of farm machinery; but he requires a great amount of hand work

4. The demands
he makes upon
his subjects

instead. Thus he keeps a large number of persons in his service, men, women, and children, throughout almost the entire year. Indeed, many thousands of families earn almost their entire livelihood by working in the cotton fields. Hardly any negro child is too small, or any negro Uncle or Mammy too old or too feeble, to help in this work.

In March or April they plant the seeds in rows like corn, very thickly in order to insure a good crop. When the plants are well up they thin them out, work

that is done with a heavy hoe and that is called *chopping to a stand*. Then all through the long, hot summer they carefully hoe and cultivate the plants, killing the weeds and keeping the soil in good condition.

Meanwhile the plants are preparing a harvest. In the early summer *squares* appear, which are followed by beautiful blossoms, first white and then pink. These blossoms very soon drop off, and there is left the tiny *boll* of cotton. Finally the full-grown bolls burst open, and the white, fleecy fiber—King Cotton—comes into view all over the field. What can you think of that looks like it? The cotton picking is then ready to begin.

A score or more of persons—whole families together, negroes for the most part—enter a field; and they have a jolly time at the work. Each picker car-



Photo from Ewing Galloway, N. Y.

Fig. 108.—“Company” houses for Southern mill workers

As the text tells you, many of the Southern cotton mills are in small villages or in the country. Even in the good-sized cities, mill owners often build groups of attractive houses for their employees.

ries a sack slung over his shoulder, so long that it may even drag on the ground behind (Fig. 107). Since the plants grow only from two to five feet in height, even the children can easily help in the work. They stick the thumb and first three fingers into the boll and take out the cotton with a quick motion. A girl with slender, nimble fingers may do this far more quickly than a strong man with clumsy hands used to holding a hoe.

baling press, are usually in the towns. The farmer drives a huge load of the loose cotton to the gin and the press, and quickly gets back the baled cotton and the seed. About two thirds of the weight of the cotton, as it is picked, is in the seed.

Then the cotton is sent to the factory. Before being shipped any great distance, the bales are usually squeezed to about half their size as they come from the gin, so that they will not take up so much room. The traveler in the South sees bales of cotton everywhere on their way to near or distant mills: at the railroad station, on freight trains, on river boats, and at the ocean docks. Every coast city, as for example New Orleans, Savannah, and Galveston, is a center for the export of this product.

About one half of all the cotton raised in the South goes to factories there. Travelers speeding across North and South Carolina, Georgia, and Alabama, see many long, low brick buildings, often with tall chimneys. These are cotton mills. Very often, these mills are in the country, with no more buildings near them than are necessary for the workmen and their families. In the North factories are usually located in cities; but in the South a large share of the cotton mills are in the country or in small towns.

The cotton seed was, for fully a hundred years, considered a nuisance except for planting; but now it is about one sixth as valuable as the cotton fiber;



Courtesy of Tennessee Coal, Iron, and Railroad Co.

Fig. 109. — Coke and ore bins, Birmingham

Picking begins early in September, and the last picking may be as late as Christmas or New Year's. If the crop is good, there may be one bale of 500 pounds to the acre; but less than half a bale is more nearly the usual amount.

King Cotton keeps thousands of subjects at work for him in the South in other ways than on the farms. As the cotton is picked, it is hauled to the gin. Formerly, these machines were small and located on the plantations; but now they are much larger and, together with the

5. The effect he has on transportation and manufacturing in the South

and it leads to many kinds of manufacturing. An oil is pressed from it that is used in place of olive oil; also as a substitute for lard, and for other purposes. The meal is used for fertilizer, and the meal, mixed with the hulls, makes a good feed for live stock.

We saw that King Cotton has more subjects on the farms in the South than any other crop there. Likewise, he keeps more persons at work for him in transportation and in manufacturing than any other product. Hundreds of thousands are serving him there all the time; he is a powerful king in a very wide realm.

Pittsburgh is a very important manufacturing center, for reasons that you can recall (p. 78). Birmingham, in Alabama, is often called the Pittsburgh of the South, and it even has one important advantage over the Pennsylvania city. Coal is

just as conveniently located and iron ore far more so. When you recall the distance iron ore must be carried in order to reach the blast furnaces of Pittsburgh (p. 78), you can see how important the advantage of Birmingham is. Iron can be manufactured more cheaply in the latter place than anywhere else in the United States. Birmingham is much smaller than Pittsburgh; but it is, also, very much younger. It manufactures a large amount of iron and steel, and is one of the most rapidly growing cities in the South. This section does not yet compare with Pennsylvania in output of iron and steel; but it is the leading center for that industry in the South and has a fine prospect for growth.

The Southern States, including West

Virginia (p. 77) and Kentucky, mine nearly as much bituminous coal as all the northern states put together. They have other things, also, to take the place of coal in manufacturing. One of these is running water. The heavy rainfall in these states

Further comparison of the South with the North in advantages for manufacturing

(Fig. 146) supplies a great amount of water to the streams, and therefore a great amount of power for manufacturing. Much of it is already converted into electricity for use in the cotton mills and other factories in the areas bordering the mountains.

Other substitutes for coal are oil and gas. The traveler in Oklahoma, Texas, Arkansas, and Louisiana sees hundreds of derricks in the oil fields. In north-eastern Oklahoma they are especially numerous. Recently there has been great excitement in all these sections over the discovery of new oil fields. Much more oil is now produced in the South than in any other section of our country.

The South has been too much occupied with agriculture to make full use of its advantages for manufacturing, but it is now turning its attention much more to this form of industry.

You remember (p. 86) that the stumps of trees in the Great Lakes region are about all that is left of former forests in that part of our country; also, that those northern states must now obtain a large part of their lumber from distant sections of the country. The South is exhausting its large forests in much the same way. Formerly the belt of long-leaf pines extended along most of the coast

How the South is repeating the experience of the North Central States in treatment of its forests

from Chesapeake Bay far into Texas. They are very different from the pines of the North, having longer needles and a much harder wood that is especially valuable for building. Besides, the sap



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Fig. 110. — Collecting crude turpentine from Southern pine trees

Crude turpentine is obtained by tapping the tree. One method of tapping is to cut V-shaped scars in the tree with a notch below, thus forming a rude cup. The liquid oozes out of the scars and is collected in the ridge cup, from which it is dipped by a paddle. From time to time fresh scars are made higher and higher on the tree.

that oozes forth when the bark is scraped away is made into turpentine, tar, and pitch (Fig. 110). These are called *naval stores*, and are used in making paints, varnishes, and many other things.

The people of North Carolina used to be called "Tar Heels" because so large a quantity of naval stores was produced there. But that state and several others have nearly exhausted their hard pine. A trip along the coast from Virginia to

New Orleans would readily show this. In North and South Carolina one would see many cut-over areas, with old sawdust piles, abandoned sawmills, and even abandoned towns. While some lumber still comes from these states, most of the Southern pine is now obtained farther west, from Mississippi, Louisiana, Arkansas, and Texas.

The hardwood forest region contains such trees as oak and hickory. What are some of the uses of such woods? Most of our hardwoods now come from the South, Memphis and Nashville being our most important hardwood centers. The South now produces nearly half of all the lumber that is used in the United States.

That cannot, however, be kept up. While there are still very extensive forests in the western states of this group as well as in the Appalachian Highland, the Southern forest area is becoming smaller each year; and unless care is taken, the South, like the North, will soon be seeking its lumber from distant places. Many persons believe that such destruction of forests is a very serious mistake. Can you suggest why?

There are many things about New Orleans that make it an especially interesting city. For example, it is located on the Mississippi River, and while in most places people go downhill to approach a river, there they have to go uphill. The city lies below the level of the river when the water is deepest. Broad banks of earth, called *levees*, have therefore been built along both sides so as to shut in its waters.

Interesting facts about New Orleans

1. Difficulties caused by the low land, and how they have been overcome

a. The danger of floods and how it is met

When we consider the large volume of water that must reach the ocean when streams are swollen by floods, it is easy to understand why a river should be higher than the land about it. Large areas, unless protected by levees, are covered by the overflowing waters. Perhaps you have seen that flood waters carry much heavier

away the deposits made during floods.

Can you imagine what would happen if the levees gave way? This does sometimes occur, especially in the spring after the snows have melted in the North and caused the water to rise. Then hundreds of men patrol the levees night and day to check the slightest leak. The smallest hole



Fig. 111. — St. Charles Avenue, New Orleans

In what ways does this street differ in appearance from the streets in the residence districts of Northern cities?

loads of soil and sand than the ordinary current does. These are constantly being deposited as sediment. This has caused many people to believe that such rivers were constantly raising their channel beds. That this is not true is proved by measurements of the bed of the Mississippi River, which are made nearly every year. The records, which cover a period of a hundred years, show that there has been no raising of this river bed. In other words, the current at other times carries

may be the beginning of a disastrous flood.

The land on which New Orleans stands is almost perfectly flat, the highest portion being a ridge hardly more than

two feet in elevation. "How can such land be drained?"

b. The need for drainage and how it is provided

you may ask. Also, "How can people live there, if it is not well drained?" The seriousness of these questions is all the greater when one learns that fifty-seven inches of rain fall there each year; also, when one remembers

that every large city produces a great quantity of sewage that must be carried away by some system of drainage.

For a long time there were no good answers to these questions; and the people suffered as a result. The ground was too wet to allow cellars under the houses;

By such means, the level of water in the ground was lowered so that cellars are now possible; and there has been no epidemic of yellow fever since the fever-causing mosquitoes were destroyed in 1906. It required great energy to put through such improvements; but the results are wonderful.



Photo from Ewing Galloway, N. Y.

Fig. 112. — What happens when a Mississippi levee breaks

In the front is seen the gangplank over which people who are being rescued pass from what little is left of the levee to the rescuing steamer.

the surface water ran off in gutters and open ditches; and the principal streets were sometimes flooded with several feet of water. Of course many kinds of sickness followed; particularly, mosquitoes so flourished that every few years there was an epidemic of yellow fever that killed thousands of the inhabitants.

At last a solution of the difficulty was found and carried out at great expense. Since the sewage could not naturally flow up into the river to be carried away, it was pumped up. Sewer pipes were laid in the streets; these led into cesspools, and pumping stations were established for pumping the sewage from them into the river. The rain waters were likewise pumped into Lake Pontchartrain near by.

By such means, the level of water in the ground was lowered so that cellars are now possible; and there has been no epidemic of yellow fever since the fever-causing mosquitoes were destroyed in 1906. It required great energy to put through such improvements; but the results are wonderful.

Probably the most interesting place is the harbor. The river is about a half a mile wide and from forty to two hundred feet deep, and vessels from all parts of the world dock there. The port ranks next to New York in importance in our country. As might be expected, thousands of bales of cotton can be seen on the wharves, for New Orleans is the leading cotton-shipping port in the world. There are great quantities of sugar and rice, also. Why should they be expected? Since New Orleans so directly faces South America, many of the products of that continent enter the United States by this

The city is very different from any other in our country, with its semi-tropical climate and its great variety of inhabitants and of styles of building. There is the French quarter, where the people still speak French as their native tongue, and where many old-style mansions can be seen, with tiled roofs, iron railings on the balconies, and flower gardens. The most common trees are the palm, the fig, the live-oak, and the mag-

2. Scenes
about the city



DEVINNE-HALLENBECK CO., N. Y. C.

Unloading cotton at New Orleans

port. Much of our coffee and bananas reaches us by way of New Orleans. Notice, on Fig. 315, how much nearer New Orleans is than New York to the northern and eastern coasts of South America and, because of the Panama Canal, to its western coast also.

There is a striking difference between the North and the South in the location of chief cities. Of the ten largest in the North, four are on the Atlantic coast, four on the Great Lakes, and two on the large rivers. Every one is on some important water route.

Of the ten largest in the South, two, New Orleans and Houston, may be counted as coast cities, although they are some distance inland; ocean vessels can readily reach them. Three are on rivers, namely Louisville, which is next to New Orleans in size; Memphis, on the Mississippi River; and Richmond, on the James River. The other five, which are Atlanta in Georgia, Birmingham in Alabama, Nashville in Tennessee, and Dallas and San Antonio in Texas, are upon no important navigable waters. Find these ten on Fig. 105. Water routes have counted for very much less in the South than in the North in the location of cities; for, while each of these six cities has a population of more than 100,000, there is but one coast city between Washington and New Orleans that reaches 100,000—Norfolk in Virginia. Other important coast cities are Charleston in South Carolina, Savannah in Georgia, Jacksonville, Miami, and Tampa in Florida, and Mobile in Alabama. Locate them.

What causes such a difference? It certainly is not due to lack of water routes in

the South: for that region has many hundred miles of navigable rivers and much more coast line than the North.

The difference is due chiefly to the difference in the occupations of the two sections. In New York City the two leading occupations were found (p. 72) to be manufacturing and transportation; these are much more important than agriculture in the Northeastern States. In the North Central States they rank about equally with agriculture, in spite of the great amount of farm products. If we consider the North as a whole, that is, the Northeastern and the North Central States combined, we find manufacturing and commerce to be considerably more important than agriculture.

It is just the other way in the South; agriculture is by far the most prominent industry. For this reason few of the chief cities owe their growth to advantages for transportation by water. Like Indianapolis (p. 95), they have grown up at a distance from water routes, in the midst of rich farm land and depend mainly on such land for their prosperity.

1. Name and locate places in the South to which Northerners go for the winter.
2. What are some of the attractions there?
3. What likeness between the North and the South does the traveler see in crossing these states from east to west?
4. What difference does he see in the amount of unused land?
5. In the extent of tobacco fields?
6. In what states does he find cotton, and how prominent is it among farm crops?
7. Locate two other farm products not grown in the North, and tell some-

The reasons
for this difference

Review
questions

thing about their appearance. 8. What difference is there in the character of the population? 9. In the number of large cities? 10. Tell about a fourth important advantage of the South over the North in agriculture. 11. Explain the advantage of the South in raising fruits and vegetables. 12. Compare a small Southern farm with one in Ohio. 13. Compare a Southern plantation with an Ohio farm. 14. State some facts about life in the hilly and mountainous section of the South. 15. How did King Cotton get his name? 16. Why has he established his kingdom in the South? 17. What demands does he make upon his subjects? 18. What effect does he have on transportation and manufacturing in the South? 19. Compare the manufacturing about Birmingham with that about Pittsburgh. 20. Make a comparison of the South with the North in advantages for manufacturing. 21. How is the South repeating the experience of the North Central States in the treatment of its forests? 22. What kinds of trees grow in the South? 23. Explain the danger of floods in New Orleans and how it is met. 24. Show the special need of drainage there and how it is provided. 25. Describe scenes about that city. 26. How does the South differ from the North in the location of its large cities? 27. Explain the reasons for this difference.

1. Make a collection of advertisements of winter resorts in the South. 2. Make a collection of articles manufactured from cotton. 3. Grow some cotton and some rice plants in the schoolroom. 4. Write the life story of a bit of cotton, from the time it is picked in the field until it becomes a

part of a garment or of a sheet of letter paper. 5. Mention other advantages of the Southern climate; for example, in regard to houses and clothing. 6. In what ways are mosquitoes destroyed? 7. Make a drawing to show the plan for carrying off sewage in the town where you live or trade. 8. Write a story describing the damage done by a break in a levee of the Mississippi River. 9. If an exposition were held in New Orleans showing the products of the South, what things should be exhibited? See to what extent you could prepare such an exhibit. 10. Trace the shortest route by water from New Orleans to Chile, in South America; to China. 11. King Cotton has many enemies. Find out what some of them are, and how they are fought. 12. Here is a question for debate: *Resolved*, that the world would be better off if the tobacco plant had never been discovered. 13. Spell the names of the Southern States, and write the abbreviations for them. 14. Make an outline drawing of these states, and put in the principal rivers, mountains, and cities.

V. THE WESTERN STATES

It is a surprise to many people to discover that after traveling all the way from New York to Chi-
 cago they have gone less
 than one third of the dis-
 tance across the continent. They must continue the journey 100 miles beyond Omaha, in Nebraska, before they have gone half way to San Francisco.

The great distances in the West

The West (Fig. 121) covers a vast area. California is nearly as long as the distance from New Orleans to Chicago,

Suggestions
for extra
work

and Montana is longer than that from Buffalo to Chicago. The smallest state in this group is larger than the largest east of the Mississippi River, and the average area of these states is more than twice that of New York. Prove that these statements are true (Appendix).

In most of the states thus far studied, the rainfall varies from thirty

Why people formerly hesitated to move to this section

to sixty inches per year. When some of their inhabitants

moved a few hundred miles west of the Mississippi River, they discovered that they could not raise their old crops. While at least thirty inches are needed for agriculture as they had been accustomed to carry it on, less than twenty inches fall in much of this new territory. How much of this area suffers from lack of rain you can tell from Fig. 146. Of the eleven states in this group, how many have large areas that receive less than twenty inches? Answer this question by comparing Fig. 121 with Fig. 146. What portion of the whole area do you estimate this to be? Which states have large sections whose rainfall is less than ten inches?

Owing to lack of rain, the entire eastern and central portion of this group of states came to be called the Great American Desert, although it was often uncertain just what regions the people

who used the name had in mind. Seeing that the old-style farming was not successful here, many people rashly concluded that the entire West was of little value.

In the year 1848, however, gold was discovered in the stream beds of Cali-



Photo by Brown Bros.

Fig. 113. — Oranges and snow in southern California

California is a land of sharp differences. Its southeastern part is the hottest in the United States; its mountain tops are covered with snow all the year round. It contains the lowest and the highest land in any of our states; the driest regions, and some of the wettest; some of the most productive, and some of the most desolate.

fornia. By scooping up some of the sand, gravel, and water in a pan, shaking the mixture, and then pouring off the water carefully, bits of gold and even good-sized lumps, or *nuggets*, might be found at the bottom. A man sometimes made hundreds of dollars in one day in this way. The discovery of gold on the Pacific coast caused great excitement:

Why people moved to California, and different ways in which the trip was made

1. Effect of the discovery of gold in California

and as this method of mining, called *panning*, was so simple that almost anyone could provide himself with a gold-mining outfit, thousands of people started for California.



Fig. 114.—The Overland Limited on the “cut-off” across Great Salt Lake

The best train on the Union Pacific-Southern Pacific route is here seen crossing the longest bridge in the world. Locate it on Fig. 121. The shallow water made such a bridge possible. What advantage, do you suppose, was gained by its construction?

How should they go? From our Northeastern States and from Europe there were three main routes: one was by boat around South America; the second was by boat to Panama, then across the Isthmus and again by boat; the third was across the “Great American Desert.” Trace these routes. Which do you think you would have chosen?

The third is the one that concerns us. Many men took their families by the *Overland Trail*, which was very nearly the same as that taken by the Union Pacific Railroad a few years later (Fig. 150). Large numbers traveled together, first providing themselves with covered wagons drawn by horses or oxen and with quantities of food and other necessities, including weapons for defense.

Although people had gone overland to the Pacific before the gold rush, the way was poorly marked; there was danger of death from thirst; and savage Indians might attack them at any time. Does Fig. 121 suggest other difficulties and dangers that had to be met? Many persons perished on the way; but so many reached the coast by some route that in 1850 California had become important enough to enter the Union as a state.

As the population of the state increased, mail between the East and the West had to be sent back and forth in the quickest possible time. One of the means employed for this purpose was the *Pony Express*. Starting from St. Joseph, in Missouri, the end of the railroad at that time, and following the Overland Trail most of the way, it carried mail through the places now called Laramie, Pocatello, and Sacramento to San Francisco in eight days. Locate these cities. This was accomplished by the use of the best horses in the country, traveling at top speed. It was a relay race for 1,400 miles.

One can imagine that it was expensive to send mail in this way. The price was at first five dollars, and later two dollars and fifty cents, for a letter. What does it cost now?

Such struggles to cross the Great West help us to realize the joy with which people welcomed the first railroad crossing the entire distance. It was completed in 1869.

This railroad, called the *Union Pacific* as far as Ogden, in Utah, and the *Southern Pacific* between Ogden and San Francisco, really begins at Council Bluffs in Iowa, just across the Missouri River

2. Early ways of reaching California

from Omaha, although the trains start from Chicago. Beginning the journey at

What one can see along the Union Pacific Railroad to-day

1. The mountains and plateaus that have to be climbed

Omaha, one travels the length of Nebraska over very level country, called the Great Plains (p. 96). In every direction one can see for many miles; for there are no hills or forests. The Great Plains extend into the eastern border

of the Western States, Wyoming being the first of the Western States reached in our journey. Although the plains seem almost perfectly level, the train is climbing all the time. At Omaha it was 1,000 feet above sea level; but at Cheyenne it is more than 6,000 feet above. It has climbed one mile in that distance and is now as high as the peak of Mount Washington, in New Hampshire. Fig. 62 shows the long upward slope. Note the gradual rise from the Mississippi River.

At Cheyenne the train is at the foot of the Rocky Mountains; in the next thirty miles it must climb 2,000 feet more in order to cross them. At the highest point some of the passengers have difficulty in breathing, for at this altitude, 8,000 feet, the air is much rarer than at sea level.

In Wyoming one crosses the continental divide of North America (Fig. 61). Some of the rain that falls here reaches the Atlantic Ocean, and some the Pacific. In Fig. 121 note how many rivers rise among these mountains, and trace them to the ocean.

Through Wyoming the railroad crosses a plateau more than a mile above sea level. Shortly before reaching Ogden, it crosses the Wasatch Mountains, in Utah (Fig. 115).

Again, after leaving Ogden, one travels for nearly 500 miles over a plateau as far as the eastern boundary of California. Then the Sierra Nevada is crossed at an elevation of about 7,000 feet. After that the road runs downhill to Oakland, where ferries take one across San Francisco Bay to the city of that name.

Much of this country looks now as it did when the pioneers of 1849 traveled over it. Trees are seen mainly along the streams and in the mountains; in some sections there are scattered bunches of grass, and over wide areas there are sagebrush and

2. Scenes such as the pioneers of 1849 saw in following this route



© Keystone View Co., Inc.

Fig. 115. — Wasatch Mountains from Ogden in Utah

Except at the very end of the summer, these mountains are covered with snow. For many miles the railroad follows the course of a stream through a deep gorge between lofty ranges. The green alfalfa and poplar trees rest the eye of the traveler after many miles of desert.



Fig. 116. — The Sierra Nevada

This view is taken from a point near the pass where the Southern Pacific Railroad crosses the range. The snowy Sierra is a region of beautiful mountain landscapes.

© Detroit Publishing Co.

remarkably clear air allow views of places scores of miles away. From the highest point on the railroad in Wyoming one can sometimes see Pike's Peak in Colorado (Fig. 117). Measure this distance on Fig. 121.

Yet the scenes along this route are not all just as they used to be; for two important changes have taken place in the plant life and the hu-

3. Two important changes in the plant life since 1849

cactus. For long stretches there is very little plant life of any kind. In the driest regions, one sees little besides bare, sandy soil, rocky ledges, and mountains.

On crossing the Sierra Nevada into California, however, the scene changes. There one comes into a region of abundant rainfall, as shown in Fig. 146, where trees and crops grow in great abundance. The western slope of the mountains is covered with magnificent forests. The rest of the journey is through the fertile Valley of California (p. 132) to the prosperous cities on San Francisco Bay.

The railroad follows the straightest possible route, and keeps to the passes between the peaks. The high points that are reached, however, and the

man life dependent upon it. The traveler now comes to many thriving towns and villages surrounded by orchards and gardens, with rich fields of alfalfa, grazing cattle and sheep, and prosperous homes near by. More productive districts than



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Fig. 117. — Pike's Peak from the "Garden of the Gods" in Colorado

Unlike the great volcanic peaks of the Pacific coast states, the mountains of Colorado rise from a high plateau, and do not, therefore, appear so high as their total elevation above the sea suggests.

these are seen scarcely anywhere in either the East or the South. Again, far distant from any village, one sees now and then a farmhouse with a large barn near it, stacks of hay in the fields, and, in the growing season, thriving crops of wheat or kafir corn and alfalfa. The farms are far apart, yet the total number is large.

Then one asks this question: Can it be that man is changing the climate of this region, and that the "Great American Desert" is disappearing? Certainly a region that was formerly thought to have little value now has thousands of excellent farms, and is supporting tens of thousands of people. How has such a change come about?

Denver, in Colorado, is one of the largest cities in the arid region; but it has not been built up by changing the climate. Several things have caused its growth. Probably the most important is the use of water from a neighboring river.

The Rocky Mountains west of the city are lofty enough to receive considerable rain and therefore to be the source of many important streams, as can be seen on Fig. 121. One of these, the South Platte, flows past Denver. A ditch or canal leads water from it out over the arid plain near the city, and smaller ditches run out from the large one. The river itself has a rapid



© Ewing Galloway

Fig. 118. — A sheep ranch in Colorado

Sheep flourish in places where the grass is very scanty. Would you expect cattle to thrive here?

fall; but just enough slope has been given to the ditch to cause the water to flow gently. Thus the ditch, following the direction of the river, soon runs on a higher level than the river does, and the smaller ditches can carry water to many fields along its course. When a field needs water for the growth of crops, one of the smaller ditches leading directly to it is tapped, and the land is flooded; or the water is allowed to run across it in furrows that are a few feet apart. The method followed depends upon the kind of crop under cultivation. Such a plan for watering is called *irrigation*.

As there is danger that the supply of water may not last through the season, *reservoirs* are built to store the water of the spring freshets, which is let into the ditches and on to the land later as it is needed.

Such an arrangement is, of course, expensive, and each farmer pays for the

4. Why Denver has grown up where it is

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a. How water is distributed over the land, and the changes it has made

water he uses, just as in a city one pays for the water used in his house. But the farmers can afford to pay a good price; for on the upper side of the ditch, which is too high to be reached by the water, the land is fit only for grazing,

other districts like it, mining would have been much more difficult and costly at these points.

Naturally, other industries followed farming and mining. The ores containing the metals had to be broken up and

melted or treated with chemicals, in order that the metals might be extracted, or refined. Wheat had to be ground into flour. Cattle and sheep had to be slaughtered for meat and hides. And many kinds of machinery and other articles had to be manufactured. Much of this work was done in Denver. As the city grew, it came to be a center for trade and manufacturing for the surrounding district. When the Union Pacific Railroad was built, Denver was too small a town to influence the route chosen; but now it is one of the large cities in the West (Fig. 119), and a great railway center.



© Ewing Galloway

Fig. 119. — The mint and the state capitol, Denver

Which building is the capitol? Many state capitols have domes, in imitation of the capitol at Washington (Fig. 77). Compare this picture also with Fig. 30.

(Fig. 118) and is worth only a few dollars per acre at best; while on the lower side there are rich fields of grain, vegetables, and alfalfa, where an acre may be worth several hundred dollars.

With such an abundance of farm products near Denver, other industries were easily developed. In the mountains are many kinds of minerals. Gold is mined at Cripple Creek, and Leadville is a center for gold, silver, and lead. Without the food from the irrigated district about Denver and

Salt Lake City, like Denver, was too small to be included on the route of the Union Pacific when it was planned. The land about it used to be even drier than the plain about Denver. But a group of people known as Mormons moved there at about the time gold was discovered in California and began irrigating the level land southeast of Great Salt Lake. There are now thousands of acres in this region that are as productive as any land in the United States. The principal crops are grain, fruit,

5. Reasons for the growth of Salt Lake City

b. Other occupations made profitable by these farm products

sugar beets, and alfalfa; and there is much stock raising.

The surrounding mountains are rich in metals, particularly copper (Fig. 120). Refining ore has, therefore, become an important industry. Other kinds of manufacturing have developed, as in Denver, and the city has become an important center for trade.

Great Salt Lake lies a few miles northwest of the city. Although many mountain streams flow into it, there is so much evaporation, owing to the dry air, that it never overflows. Only lakes that overflow, and thus have their water changed all the time, remain fresh. Great Salt Lake, therefore, has grown more and more salty, until it is several times as salty as the ocean. Even one who cannot swim floats upon it easily because the water is so heavy with salt. Would you not like to bathe in it?

There are many other irrigated districts along the route of this railway. But how is farming possible in so many other places also?

Mr. Grant's farm in eastern Colorado will serve as an example to answer the question. It is square in shape and contains 640 acres.

How long would a fence be that inclosed it? It is almost as level as a floor, and every foot of it can be plowed except one corner where a brook runs.

Mr. Grant came here forty years ago. His first buildings were of sod. When the prairie grass was first plowed up, the sod was turned over in unbroken strips sometimes a mile long. These strips were cut up into sections and laid in courses, like brick, to form walls. The roof was made of heavy plank with a little slope, and covered with earth and gravel a foot deep. The better sod houses have glass windows and wooden floors; Mr. Grant's house was of that sort. It was very comfortable, too, in many ways, being warm in winter and cool in summer. What objections do you see to such a home? Mr. Grant's buildings, however, are now all of wood.

Water, of course, was necessary for the family and the animals and for watering the garden. This was obtained from wells by means of windmills; the wind blows almost all the time on these



© Photo from Ewing Galloway, N. Y.

Fig. 120. — The copper mines at Bingham, Utah

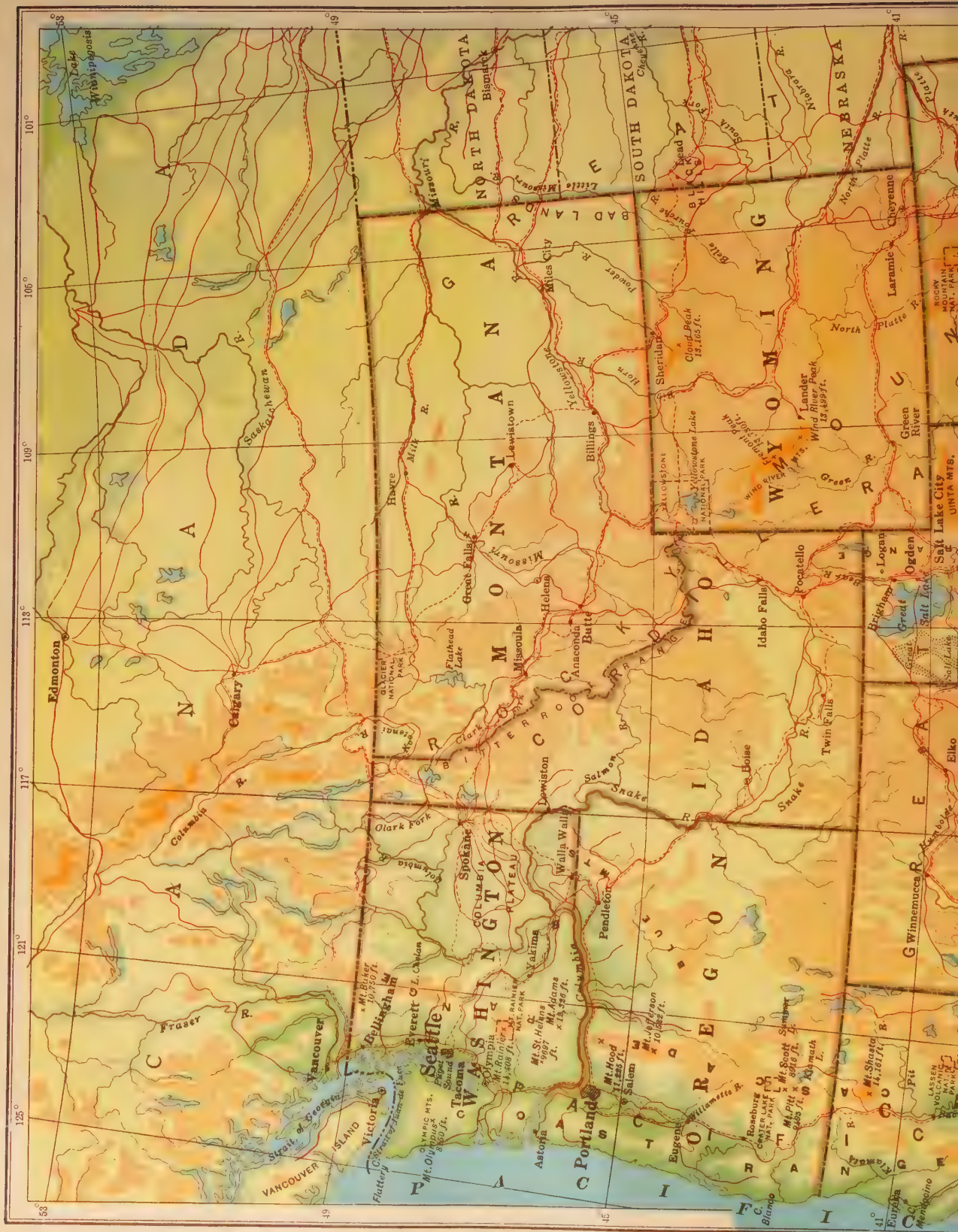




Fig. 121

plains, sometimes very hard for days at a time. Near the creek below the house are two windmills that supply water for the house and garden; these are running most of the time. They pump water into tanks, which are filled every night in the dry season; and

that he must choose only such crops as were suited to a dry climate; and that he must cultivate the soil in such a way as to prevent its moisture from escaping.

So he let the prairie grass continue to grow on about half of the farm. This forms thick clumps or bunches over the



Fig. 122. — Cutting wheat on Mr. Grant's farm

Courtesy of Moline Universal Tractor Co.

The machine used here is called a *binder*. It cuts the grain and ties it into sheaves, or bundles, which it leaves behind in the field.

enough is let out into the garden to raise an abundance of potatoes, vegetables, and small fruit. There are flowers, also, about the house, and a few shade trees.

The brook contains too little water to irrigate the fields, and there is no larger stream near. After many failures Mr. Grant learned that he could not farm by the methods he had used in Illinois. After much experimenting he found out three things: that he could raise a good many cattle;

ground, but never grows more than a few inches high. During the hot summer it dries up and forms natural hay that is very nourishing. Cattle can live on it all winter, if necessary. Mr. Grant sells some beef cattle every year, and keeps a fine herd of dairy cows.

Some of his crops are for cattle feed. The principal crop is sorghum, which looks much like corn. It will live through very dry weather and does well where there is but little moisture. There is some *kafir corn*, some barley, and a

b. The crops
that are chosen

strip of *alfalfa* along the creek. The water there spreads out a long distance through the ground, and the roots of the alfalfa get the benefit even if the moisture is as much as twenty feet below the surface. This is one of the reasons why alfalfa is well suited to a dry country. It remains green through the driest of weather and in that condition is especially good for hogs. As hay it is equal to the finest clover in the East.

All these crops, together with the prairie grass, are sufficient to feed the stock and, as most of the cream is sold, there is some income every month.

Chickens and turkeys also bring in considerable money. They thrive in the dry climate, and require very little feeding in addition to the insects and seeds they find. Enough money comes from these sources and from the sale of beef cattle during the year to support the family.

Mr. Grant sows about 100 acres of wheat every year. This crop brings him his chief income. It is well suited to this climate, because it can get a good start early in the season when most rain falls, and needs but little moisture as it ripens.

It has taken a long time to learn how to cultivate these crops in such a way that most of the moisture will remain in the ground. The chief thing to do is to keep a layer of fine, loose soil on the top. Moisture from below does not easily work its way through such a layer to the air, and rain

sinks quickly into the soil instead of running away.

Thus, in his selection of crops and in his care of the soil, Mr. Grant has changed his methods of work to suit the dry country. Farming as Mr. Grant does it is unlike that of regions of abundant rainfall or where irrigation is used, and is called *dry farming*.

Thousands of farmers throughout the semi-arid regions of the West, all the way from eastern Washington

to New Mexico, are now living a life somewhat like this. It is lonely, we must admit, for

c. The loneliness of such a life and some of its pleasures

homes in such a country must be far apart. The nearest neighbors to Mr. Grant are more than a mile away; and the nearest town, which is only a village of 500 inhabitants, is five miles distant. Yet there are many pleasures. Perhaps the greatest pleasure of all is the feeling of independence that Mr. Grant and his family enjoy.

On the journey along the Overland Route one passes through remarkably



Courtesy of U. S. Reclamation Service

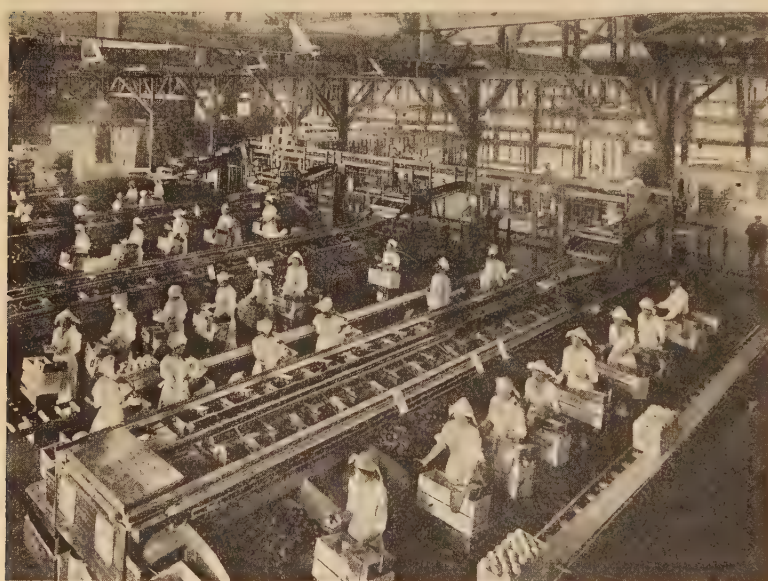
Fig. 123. — Sagebrush

This is how the desert looks before it is irrigated.

few cities. Name some of the largest (Fig. 121), and look up their populations in the Appendix. Hour after hour, between stations, one sees from the train such dry farms as that of Mr. Grant, or arid land bearing only sagebrush (Fig. 123). Then one wonders how a railroad running through such a country can pay expenses;

Some of the attractions of San Francisco and surrounding country

1. Products of the Valley of California



Courtesy of California Fruit Growers' Exchange

Fig. 124. — Wrapping California oranges

The citrus fruit industry gives employment to many persons besides those who grow the fruit. These oranges will be shipped in refrigerator cars by fast freight.

and why there are so many long, heavily laden passenger and freight trains passing each way every day over that dreary stretch.

This question is answered when one crosses the Sierra Nevada into California and approaches San Francisco; for the Valley of California is one of the most productive parts of the earth. Fig. 146 shows that the rainfall is heavy in northern California and on the western slopes of the Sierra, but light over

most of this valley. The many streams, however, make irrigation possible.

Most of the products grown elsewhere in the United States are found here. Apples, oranges, peaches, pears, plums, cherries, and figs are abundant, and more grapes are raised than along the southern shores of Lakes Erie and Ontario (p. 81). Nearly all the raisins eaten in the United States come from

this valley. There are many large fields of grain—wheat, oats, rye, and barley; potatoes and sugar beets are common, and rice is cultivated extensively. Alfalfa is one of the leading crops, and there are large numbers of cattle and sheep. The valley is an admirable place for truck gardening, and is one of our most important centers for poultry. Estimate the length and average width of the valley as shown on Fig. 121.

The train reaches the end of the railway at Oakland. There a ferry

takes passengers

2. Excellence of San Francisco harbor

across the bay to San Francisco. This bay is the harbor, one of the largest and finest in the world. It is about fifty miles long and from five to ten miles wide. It is said that one of the first Spaniards who explored the Pacific coast reported that this harbor was so large that all of the navies of Spain could play hide and seek in it. The entrance to this harbor, called the *Golden Gate*, is one of our few important gateways to the lands across the Pacific.

Many cities and towns are located around the bay. Name some of them, and find their populations in the Appendix. San Francisco is the largest, and has a very striking location. Note in Fig. 121 how nearly it is surrounded by water. There are many high hills in the city, for the Coast Ranges almost entirely surround the bay.

Among the leading industries in the city are the refining of sugar and meat packing. The raw sugar is brought from the Hawaiian Islands (p. 147).

Many people of foreign birth live in the city, as in the large cities of the East; but there is an especially large Chinese section, called *Chinatown*. Scarcely any white people dwell in this section, and the customs of the people are much the same as in China itself. Why should so large a number of Chinese have gathered here?

One who has made the journey across the Western States to San Francisco has seen what a vast arid waste it still is in many places, but how irrigation and dry farming together are changing it. He has noted how they have made it possible to develop extensive mining, manufacturing, and trade, and how many towns and cities have grown up as a result. There are now eight great railroads that completely cross the Western States; since they cross many states to the east also, they are commonly called *transcontinental* lines. Some cross the northern states of this group, others the middle states, and still others the southern. Which of these have we already discussed?

There are three different railways that can be taken on the northern route, all of them branching out from St. Paul and

How the northern route across these states compares with the central route

1. The likeness of the arid sections



© R. I. Water & Co.

Fig. 125. — San Francisco Harbor

You are here looking toward the northeast over San Francisco bay. At the extreme right is an island half way between San Francisco and Oakland. At the extreme left is the entrance to the Golden Gate.

all reaching the Pacific coast by way of Spokane (Fig. 121). One of these, the Northern Pacific, runs through Billings, Butte, and Spokane to Seattle. Trace its course in Fig. 150 and note the states that it crosses. Trace also two other routes that cross the same states.

Many travelers on this route stop for a visit to Yellowstone National Park in northwestern Wyoming. Here there are hundreds of springs, some only two or three inches deep and others many feet, which are boiling all the time.

2. Attractions of Yellowstone National Park



© Detroit Publishing Co.

Fig. 126.— One of the few buffalo herds left in our country

At one time buffalos were numerous over most of the vast area between the Appalachian Highland and the Rocky Mountains. The Great Plains, because of their vast extent of grasslands, were once the home of millions of them. Many thousand Indians depended on these buffalos to a great extent for their living. White men slaughtered most of them for their hides or for the pleasure of killing. In 1920 there were about 3,400 buffalos in the United States and 5,000 in Canada.

By examining Fig. 146 you can tell whether this region is more or less dry than that along the central route. In Montana the country looks much as it does farther south; there are fully as many irrigated sections, and even more dry farms. Great numbers of cattle and sheep are seen grazing on the prairie grass here, as along the central route. The value of prairie grass for feed is suggested by the report that in one year in the early days 250,000 buffalo hides were shipped out of Miles City alone.

In some of them the boiling water and steam now and then shoot upward with a roar, rising to a height of more than 100 feet. Such springs are called *geysers*; there are scores of them in the park.

Here also is Yellowstone River, whose waters tumble more than 300 feet in one fall. In the *canyon*, or narrow valley, which the river has cut below these falls, the rocky banks are 2,000 feet high and beautifully colored. The park is properly called a wonderland.

The law forbids the killing of animals in the park; and as there are thousands of visitors passing through

the park every summer, the wild game becomes tame. Among the larger kinds are the elk, the black bear, the brown bear, and the buffalo or bison (Fig. 126). Back of the hotels, where garbage is plentiful, one can often walk up within a few feet of a bear without alarm—at least to the bear.

The two leading cities on the northern route are Butte, in Montana, and Spokane, in eastern Washington. They owe their growth much less to irrigation than Denver and Salt Lake City on the central

route. Butte is what is called a *mining town*. It is the center of one of the greatest copper-mining districts in the world, having more than 100 copper mines in its vicinity, many of them within the city limits. One seventh of all the copper produced in the United States is shipped from the Butte region. The main interest of the people, therefore, is mining, and their leading topics of conversation concern work in the mines, the price of copper, the prospect of new mines, accidents in the mines, strikes in the mines, and other events of this kind.

Spokane owes its growth first of all to the rapids and falls of the Spokane River that flows through it (Fig. 127). These furnish immense power for manufacturing to the city. Much of this power is used in lumber and planing mills and in flour mills.

The reason for both of these industries is found largely in the climate. The Cascade Mountains in western Washington, which are a continuation of the

Sierra Nevada of California, are lower than the latter, so that the damp winds from the Pacific carry much of their moisture over them and drop it in the Rocky Mountains just north and east of Spokane. On this account extensive pine forests are found in this region. Large quantities of the timber that is cut here reach Spokane.

These winds drop some of their moisture also on the plateau in eastern Washington, but so little of it that dry farming (p. 131) is the principal kind in this section. The yield of wheat, rye, and barley is especially large. This partly explains why Spokane is an important center for flour milling. In addition, there are many mines in the surrounding country producing gold, silver, copper, and lead; Spokane is a trade and manufacturing center for these mining sections.

Great quantities of fruit are raised on irrigated lands in central Washington east of the Cascades, especially apples and apricots.



Courtesy of Chamber of Commerce, Spokane

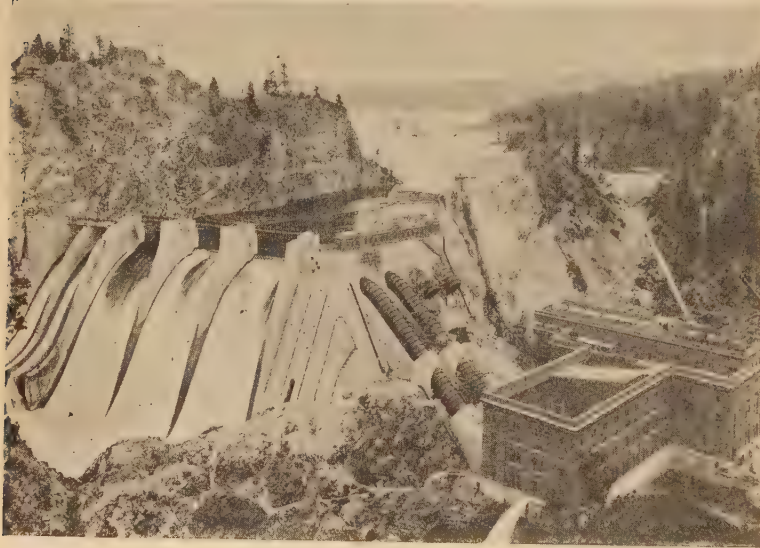
Fig. 127.—The falls in the Spokane River at Spokane

Only a small part of the power supplied by these falls is used. Notice what the text tells you about the use of this power.

West of the Cascade Mountains in Washington and Oregon is a lowland corresponding to the Valley of California west of the Sierra Nevada. An arm of the sea, called Puget Sound, reaches far southward into Washington; this corresponds to San Francisco Bay. Several large cities and many

4. How the country west of the Cascades compares with central California

Willamette River, near the point where it flows into the Columbia. The Willamette Valley and the district bordering Puget Sound, with other valleys, form a great interior lowland between the Cascade Mountains and the Coast Range. How do the cities of this region compare in size with those about San Francisco Bay (Appendix)? Trace the course of the Columbia River.



© Asahel Curtis

Fig. 128. — A power dam at the outlet of Long Lake

This plant supplies electricity to Spokane and the near-by region. A large dam has been built here. Some of the water is passed through large pipes to the power house on the right, where it is made to turn water wheels which are connected with dynamos that produce electricity.

towns have grown up about the Sound, the most important of which are Seattle and Tacoma. Both these cities are beautifully situated on the shores of the Sound within plain view of the great volcanic peak of Mt. Rainier (Fig. 136). Locate them, and name other cities near by.

a. The location and population of the chief cities

Portland (Fig. 129) is another large city of the Pacific Northwest, situated in Oregon 100 miles from the coast on the

Fig. 146 shows a very great difference in rainfall between these lowlands. The Valley of California receives

b. The difference in climate and in farm products

a light rainfall, most of which occurs in the winter months. The rainfall is heavy, however, over the lowland region in Oregon and Washington. Much rain falls farther east, also, particularly on the western slopes of the Cascade Mountains. The western portion of both these states, therefore, receives abundant rainfall for agriculture.

Considering how far north this region is, one might expect the winters to be severe. But, owing to the warm ocean winds, flowers bloom in the lowland throughout the winter, and Puget Sound is always free from ice. The winter weather is not much colder than that about San Francisco.

With such a climate, almost all kinds of vegetation flourish, including the common grains and a great variety of fruit. The cooler summers and greater rainfall bring about the main differences in agri-

culture between the Pacific Northwest and central California. Some of the same crops are grown, however, especially in the Willamette Valley.

Lumbering and fishing are two other especially important industries in this region. The climate and soil together have produced trees such as are never seen in the East or South. The Pacific coast is the land of big trees. The largest are in the Sequoia National Park in California, not far from the famous Yosemite Valley. Many trees here are as large around as an ordinary living room, and several are over thirty feet in diameter. Measure off such a circle. These trees are thousands of years old.

In Washington and Oregon a large

part of the area west of the mountains is forested, and while the trees are smaller than those just mentioned, many of them are nevertheless giants (Fig. 130). The Douglas fir, which is the most valuable, measures from five to fifteen feet in diameter, and sometimes reaches a height of 300 feet. One of them furnishes enough lumber to build a house. The Sitka spruce is also very large. Until a few years ago, the distance from the East checked any extensive use of these forests; but the trees are now being cut down rapidly for lumber. Washington now manufactures about three fifths of all the shingles made in the United States; and Washington, Oregon, and northern California together are now one of our principal sources of lumber supply.



Photo from Ewing Galloway, N. Y.

Fig. 129. — A street of homes in Portland, the "Rose City"



© Gilliams Service

Fig. 130. — Splitting one of the huge logs in the forests of Washington

Some of the logs are too large to be transported easily, and short lengths are split by means of wedges and a splitting, or *iving*, machine.

While there is fishing of various kinds along the Pacific coast, salmon is by far the most important (Fig. 131). The salmon spends most of its life in the ocean, but runs up the rivers in order to deposit its eggs in fresh water. It chooses many streams, but an especially large number run up the Columbia River, where vast quantities are caught. Most of the fish are canned. Probably some of the canned salmon that you have seen came from the canneries near Portland or from cities on Puget Sound.

If one goes West by a southern route, he may start from Chicago, St. Louis,

or Kansas City or from New Orleans, and travel through New Mexico, Arizona, and southern California to Los Angeles. Trace the southern routes on Fig. 121, and learn their names by consulting Fig. 150.

How the southern routes compare with the others

You would probably be especially pleased with the climate of New Mexico and Arizona, for it is drier and milder than that on the more northern routes. In large areas the rainfall is only five to six inches per year. What does this suggest about the amount of sunshine? Only on the lower lands is the heat intense in summer. How does the map (Fig. 121) tell you where those lands are? Yuma, in Arizona, is one of the hottest places in the United States.

The sights from the car window are much like those in semi-arid regions farther north. Cattle and sheep ranches are very numerous. What fact stated above would lead you to expect them?



Courtesy of Columbia River Salmon Cannery

Fig. 131. — Cleaning Columbia River salmon

The salmon are taken to the cleaning rooms and, after all the inner parts, or entrails, are carefully removed, the fish are thoroughly washed and scraped.



DEVINNE-HALLENBECK CO., N. Y. C.

Mt. Rainier (Mt. Tacoma) from Paradise Valley

Likewise, there are many irrigation canals. Although the rainfall is generally slight, there are high mountains in northern New Mexico and Arizona that



Courtesy of Atchison, Topeka and Santa Fe Railroad

Fig. 132. — An Indian woman weaving baskets

The Indians of New Mexico and Arizona live in villages and are therefore called *Pueblo* Indians. Pueblo is a Spanish word for village. This woman is making baskets to be sold to tourists. Some of the houses of these people are entered by ladders.

receive heavy rains and snows. Note the number of rivers and the directions in which they flow. What farm products would you expect from the irrigated land in the Southwest? Mines are perhaps even more common than in Montana. In fact, Arizona leads all the states in the production of copper, Utah ranking second and Montana ranking third. In what Middle Western state is copper mined (p. 87)?

The most interesting side trip is a visit to the Grand Canyon of the Colorado River in Arizona. The Grand Canyon at one point is a full mile in depth, and it is a hard day's climb to wind one's way down to the bottom and back again.

The most interesting side trip

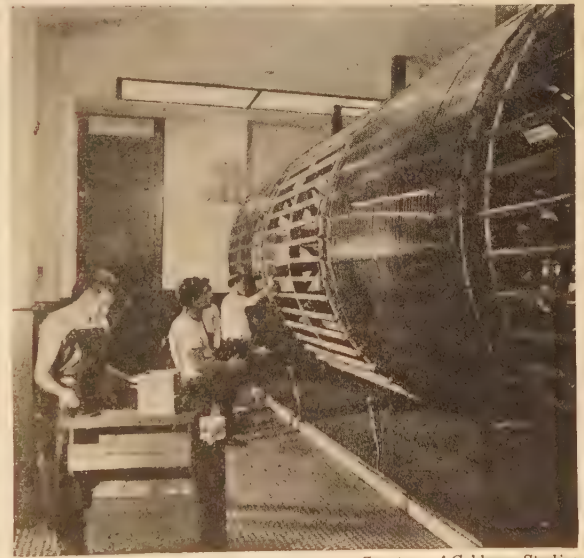
The river, fed by waters from the rains and snows of the Rocky Mountains, has cut its way through the rocks of the plateau to this great depth. It has not followed a straight channel, but has wound about; so that now the mighty gorge is from ten to thirteen miles wide at the point most often visited. There are so many tall, slender cliffs left standing that they often shut the river from view and, when seen from below, seem to be a great number of steep and lofty mountains.

Fig. 146 shows that the central and the northern routes come out west of the Sierra Nevada and Cascade Mountains upon well-watered slopes. But the southern route crosses arid land all the way to the coast.

The wonderful progress of southern California

1. Attractions of the climate

There is little rain in any part of California in summer, and the winter



Courtesy of Goldwyn Studios

Fig. 133. — Drying a moving-picture film

These men are engaged in drying a film in one of the large moving-picture studios in Los Angeles. 200,000 feet of film can be dried in this room in one day.

rainy season in southern California lasts only a few weeks. People boast of 350 days of sunshine there every year. How many are there where you live? The weather along the coast is seldom hot in summer, and the temperature rarely falls to the freezing point in winter. Therefore this is a pleasant region in which to live the year round.



Photo from Ewing Galloway, N. Y.

Fig. 134.—A park in the business district of Los Angeles

Because of the freedom from summer heat and dampness, many people prefer California to Florida, and great numbers make their homes there on account of the climate. This is an ideal place for the production of motion pictures (Fig. 133); for the bright sun, the agreeable temperature, and the freedom from rain make it possible to carry on such work almost the entire year. More than 15,000 persons

are usually engaged there in this industry.

Southern California was once a barren desert, even the land within sight of the ocean. That was because the west winds that carry moisture far into Washington and Oregon do not blow there in summer. Yet people saw that the soil

2. How an arid desert has been made one of the most prosperous parts of the world

was fertile, and that water, wherever it could be applied to the land, made it very productive.

They soon arranged for the water. Not far from the coast are the San Bernardino Mountains, which receive heavy rains in winter. Why could not these mountains be reached with irrigation ditches, the people asked; and why could not some of the rain that falls in winter be stored for use in summer?

Following such plans, dams were built among the hills and mountains, collecting the winter floods; and ditches many miles long were dug, or pipes were laid, leading the water down to the parched plains. By

such means large areas have been changed into gardens of fruit trees with attractive homes. About three fourths of the oranges, and nearly all the lemons grown in the United States, come from this region; a large part of our olives and English walnuts are raised here; vegetables flourish; and forage crops for cattle and sheep are abundant.

The production of food has favored

the development of mining; many minerals have been discovered in this vicinity, including a great quantity of oil. California is now one of the leading states in oil production. Some of the railroads and many of the factories use oil as fuel, and oil refining is one of the leading industries.

The growth in population has been astonishing. In 1850 Los Angeles was only a village, but now it is the largest city in the Western States (Fig. 121). Compare its population with that of San Francisco and Seattle (Appendix). There are also many smaller cities about it, and San Diego, another important seaport, is not far away. Measure the distance on Fig. 121.

1. State some facts showing the great distances in the West. 2. Why did people formerly hesitate to settle in this section? 3. Show how the discovery of gold in California encouraged travel to the Pacific coast. 4. Describe the early ways of making the journey. 5. Make a drawing to show the mountain systems and plateaus that had to be crossed in going from Omaha to San Francisco. 6. Describe some of the scenes that the pioneers of 1849 must have seen in following this route. 7. What two great changes in the plant life have taken place since that time? 8. How is water distributed over the land about Denver, and what advantages have resulted? 9. Name some other occupations that have been made possible by these farm products. 10. Explain the reasons for the growth of Salt Lake City. 11. Describe Mr. Grant's dry farm. 12. How are the crops planned and cared for

3. The growth
in population

Review
questions

on that farm? 13. Tell about the loneliness of such a life and some of its pleasures. 14. Name the principal products of the Valley of California. 15. Describe the harbor of San Francisco. 16. Mention some facts of interest about the city. 17. In what ways are the northern routes to the Pacific coast similar to the central routes? 18. Explain some of the wonders of Yellowstone National Park. 19. How do the two leading cities on the Northern Pacific Railway differ from those on the central routes? 20. Name and locate the chief seaports in the Pacific Northwest. 21. Show the difference between the Pacific Northwest and central California in climate and farm products. 22. Name



Photo by Gifford

Fig. 135. — The summit of Mount Hood

The group of climbers in the foreground is resting after the ascent of the lower slopes. What is the elevation of Mount Hood? It can be seen distinctly from Portland. How long a distance is that?

two other industries in the Northwest and show their importance. 23. How do the southern routes compare with those farther north? 24. State some facts about the Grand Canyon. 25. What

attractions are there in the climate of southern California? 26. Tell how this arid region has been made one of the most prosperous parts of the world. 27. Show the growth of this section in population.

farm, as it appears to you. Include the principal fields and indicate the crop in each. 6. Show how you could irrigate a piece of land in your neighborhood, either by a well or a stream. 7. Which of the three routes across the West would



Courtesy of Seattle Chamber of Commerce

Fig. 136. — Mount Rainier (Mount Tacoma)

This picture is taken from a little mountain lake high up on its slopes. Seen from Tacoma or Seattle, this mountain is an almost perfect cone, glistening white with snow. What is its height (Fig. 121)?

1. Let several pupils represent the pioneers of 1849 and debate among themselves the most desirable route to California. 2. Write a letter describing the hardships, as you imagine them, of a certain family in reaching California by the Overland Route before the railroads were built. 3. Many tons of salt are obtained each year from Great Salt Lake. Find how it is secured. 4. Find the diameter of some tree near your school and compare it with the large trees described on p. 137. 5. Make a drawing of Mr. Grant's

Suggestions
for extra
work

you now choose? 8. Point out some striking differences between San Francisco and New Orleans. 9. Find out what Western fruits, if any, your grocer sells. 10. Make a collection of different kinds of ores. 11. Trace the waters of the Yellowstone River all the way to the ocean. What states and what cities do they pass? 12. Learn the abbreviation used for the name of each of these states. 13. Many places in the West are noted for their beautiful scenery. Try to secure railroad folders or advertisements telling of the beauties of Glacier National Park; the Yellowstone National Park; Mt. Rainier National Park; Yosemite National Park; the Grand Canyon; Mt. Shasta; Mt. Hood; Lake Tahoe. Compare Fig. 121 with Fig. 150 to find the names of the railroads to which you should write. Keep the folders or advertisements that you receive as class property for future use. Each class should write only one letter to each railroad company. 14. Compare Fig. 145 with Fig. 146 to see whether there is in general a denser population in the well-watered regions than in the arid regions.

VI. TERRITORIES AND DEPENDENCIES OF THE UNITED STATES

Tourists especially enjoy the wonders of Alaska. Imagine that you are planning a visit there. Ships leave Seattle in any season for a ten-day round trip along the southeastern coast of Alaska. Follow the route in Fig. 159. Such a voyage will probably be very different from any other you may have taken.

As you start north you will have the mainland on the right and Vancouver Island on the left. The route lies between the mountainous coast and a wall of islands for nearly the entire distance to Skagway, 1,000 miles. On this account it is called the Inside Passage. Note how islands protect most of the route from ocean storms. With such protection, are you likely to suffer from seasickness on the trip? Along the coast the mildness of the weather may surprise you, for the temperature in winter is warmer on the average than at St. Louis. In the interior, however, the winters are long and cold (Fig. 137).

The winds bring a great deal of moisture also, making rain and clouds so frequent that sunshine is a treat. On the average only one out of every four or five days the year round is clear. But the moisture has made possible many of the views you admire. On the right the mountains rise abruptly from 3,000 to 5,000 feet, the summits of some of them wrapped in snow. On their slopes are magnificent forests, while at their bases large ferns and other plants are growing in great luxuriance. The wooded islands are full of game, and fish abound in the waters. Perhaps most strange and beau-

tiful of all are the long, narrow bays carved in the mountains by ancient glaciers. The walls are sometimes so steep and high that sunshine never reaches the water. You see many glaciers at the heads of the bays. What pleasures would you expect on a camping trip in this region?

Near the end of the Inside Passage you reach Juneau, the capital and largest town of Alaska, having a population of 3,000. It is built on the steep slope of a mountain; far above the town glistens the snowy peak. Many of the

2. Things to
be seen about
Juneau



Photo by P. A. Knowlton

Fig. 137. — Winter in Alaska

This trapper's cabin is near the route of the Government railroad to Fairbanks (p. 144). It is fifty degrees below zero, and the owner is chopping wood for his stove. What two facts in this picture prove to you that there is very little wind here in cold weather?

streets are on terraces, and winding stairways take the place of others, so that sightseeing is a vigorous exercise. Juneau is the center of a rich gold-mining region. Probably you will visit the Treadwell mines on the island opposite Juneau, where the largest mills in the world for crushing gold ore are located.

One of the most remarkable trips in Alaska is from Juneau northwestward to Seward and then north to Fairbanks. The voyage to Seward covers a distance of about 500 miles. Along this stretch of coast many of the largest glaciers of our continent are found. The greatest of all is the Mela-spina, which borders the water for about fifty miles.

The trip from Seward to Fairbanks, 470 miles, can now be made over the

resources. The railroad passes through good farm lands in the broad valleys, where there are also large forests of spruce and birch, especially along the streams. There is much pulp wood, suitable for the manufacture of paper, in the part of Alaska touched by this railroad. Alaska has the most important coal deposits on our western coast; a branch line of the railroad taps the largest coal area. How is this coal likely to be important to us? Note that a few miles to the west of the route is Mt. McKinley (Fig. 138), the highest mountain on the continent. At the end of the route is Fairbanks, the center of a gold-mining region.

In summer there are two other important ways of reaching Fairbanks. From Skagway, at the north-
 4. Two other routes to Fairbanks
 ern end of the Inside Passage, a railroad leads over the

mountains to White Horse in Canada. From there the journey is by boat down the Yukon (Fig. 139) to its tributary, the Tanana, and up that river to Fairbanks. Trace this route (Fig. 159).

Another but far longer way is from Seattle to the west coast and up the Yukon River to Fairbanks. Trace this route also. The lower portion of the river, which lies in a sandy plain, is winding and so shallow that only small boats can enter. Goods have to be transferred from



Fig. 138. — Mt. McKinley
Photo from Ewing Galloway, N. Y.

new Government railroad. Follow this line in Fig. 159.

This portion of the trip is of great interest because it shows many of Alaska's

ocean vessels to river boats at the nearest port, St. Michael (Fig. 159). In spite of these disadvantages, the Yukon has been an important route because it is the chief

passage through the interior. Why are these two routes open only in summer?

Alaskan waters have an abundance of fish, and a visit to one of the salmon-can-

ning plants on Kodiak Island, south of Cook Inlet, would be

worth while. The salmon are caught as they go up the rivers in the breeding season. The largest salmon-canning factory in the world is on a stream of Kodiak Island, where 3,000,000 fish are canned in a season. If the average weight of a salmon is eight pounds, how many tons would this make? So large are the fish exports that Alaska furnishes nearly a third (in value) of our country's fish products.

5. Certain islands that we might like to visit

A trip to the Pribilof Islands, far to the west in the Bering Sea, where the seals herd in summer, is seldom undertaken; yet it might well be the most inter-



Fig. 139. — The Yukon River

Steamboats like that shown in Fig. 24 ply up and down this broad river during the "open" season from late in May until early October. For hundreds of miles the river follows a winding course through the mountains, until at length it reaches low, level country near the Arctic circle (Fig. 159). Here in midsummer the sun can be seen at midnight.

esting experience of all. If one ventured there, the first thing noticed on approach-

ing would be the continuous barking of hundreds of seals. Finally out of the fog would rise rocky shores swarming with seal families. This is their summer home and the young are born here. On land the animals are slow and clumsy, and are easily driven in large groups to grounds where they are killed and skinned. So many have been killed that our Government protects them now, allowing only one company to take a certain number of skins yearly. How have you seen seal-skins used?



© Keystone View Co., Inc.

Fig. 140. — Drying sealskins

Where do you suppose this picture was taken? On the barren islands in Bering Sea and in most of the western part of Alaska, imported lumber must be used for building purposes. Can you see why?

The United States has important possessions in the tropics as well as in the far North. Porto Rico and part of a group of islands called the Virgin Islands are under our control (Fig. 158). In Fig. 59 measure the distance of San Juan from New York. A strip of land ten miles wide across the Isthmus of Panama, containing the Panama Canal, is another

Our possessions in the tropics

1. Names and locations of our tropical possessions

Honolulu, their principal city, from the Panama Canal; from San Francisco.

Farther to the west, across the Pacific Ocean, are the Philippine Islands, one of our most important possessions. Manila is their leading city. How would you reach it from San Francisco? From New York?

These regions have been obtained in different ways. The strip across the Isthmus of Panama was ob-

tained in 1903 from the little republic of Panama. Our object in securing it was the digging of a ship canal from ocean to ocean. This great task was completed in 1914.

2. How we obtained these regions, and our prospects for keeping them

The Hawaiian Islands used to be an independent kingdom. In 1893 they rebelled against their ruler and formed a republic. Later they asked to be made a part of the United States, and in 1898 became one of our territories.

The future relation of the other islands to the United States is less certain. Porto Rico and the Philippines were obtained as the result of a war with Spain. They had been for a long time

under the rule of Spain; but they were not contented with their government, and there had been much trouble and bloodshed. In 1898 the United States went to the aid of Cuba, which was fighting for its independence. This quickly



Fig. 141. — A Porto Rican school

© Publishers' Photo Service

The small building just behind the group of children is the schoolhouse. What flag floats over it? Why? What other sign of activity by Americans do you see in this picture in addition to the American schoolhouse? If you can explain the tower on the left, you can answer this question.

possession of the United States in this region (Fig. 158).

Straight west of central Mexico, far out in the Pacific Ocean, are the Hawaiian Islands, a territory of the United States (Fig. 315). Estimate the distance of

brought on a war between our country and Spain, known as the Spanish-American War, in which we were the victors. Spain then surrendered these islands to us. Cuba is now independent, but Porto Rico (Fig. 160) and the Philippines have remained under our control. We have, however, promised independence to the Filipinos (the people of the Philippines) as soon as they show that they are able to govern themselves without our help. Self-government there is not easy, for there are more than 3,000 islands in the group, and there are several races among the natives, many of whom are still uncivilized. Yet the people, under our control, have made remarkable progress.

A close relation between our island possessions and the United States brings important advantages both to them and to us.

First of all, they are important as stopping places for our vessels, where repairs can be made and where coal and other supplies can be obtained. We have many ships in different parts of the world, and it is much like reaching home when they enter the port of San Juan, Honolulu, or Manila.

Much more important is our commerce with these islands. Since they lie in the tropics, and have plenty of rain, their most important product is sugar cane. They produce, also, tobacco and coffee; great quantities of tropical fruits; and

many kinds of valuable tropical woods. A very important product of the Philippines is a plant called *Manila hemp*, which is used in making a fine quality of rope. We need a great deal of all these things, yet we do not produce enough of any of them for our own use. On the other hand, we manufacture very extensively, while these islands do little manufacturing. Thus by an exchange of products both sides are greatly benefited. We have seen that one of the leading industries of San Francisco is the refining of raw sugar



Photo by Elmendorf © Ewing Galloway

Fig. 142. — An Hawaiian village

These are the homes of sugar plantation workers on Oahu Island. The houses are owned by one of the large plantation companies.

from the Hawaiian Islands (p. 133). To what ports of the United States would you expect products from Porto Rico to be sent? Products from the Philippines (Fig. 315)?

The Panama Canal is of world-wide importance. Before it was dug, vessels bound from New York to San Francisco had to go around South America. The Canal reduces this distance 8,000 miles.

4. Influence of the Panama Canal

Estimate the distance it saves for vessels from San Francisco to New Orleans.

a. The distance it saves

What other important ocean routes that you can think of are greatly shortened by it?



© Brown Bros.

Fig. 143. — Extracting Manila hemp fiber

The Manila hemp plant really belongs to the banana family. The fiber is obtained by cutting the leaf into strips and pulling these strips over a blunt knife held against the flat side of a board. This process crushes the pulp and leaves the white fiber free and smooth. Nearly all the Manila hemp of the world comes from the Philippines.

The French began a canal here in 1881, but they lost hundreds of men by

b. Its improvement of health conditions

fever, and never finished the task. Some of the first things that our Government did in preparation for the actual digging were to fill up or drain the surrounding swamp lands, destroy all the mosquitoes possible, build comfortable homes well protected by mosquito netting, and provide good drinking water and a sewerage system. Before this time, Colon and Panama, the towns at the ends of the Canal, were among the most unhealthful places on the earth; but they have been made

as healthful as most cities in the United States. Locate these towns on Fig. 160.

The success of these sanitary measures has had a wonderful influence on people's opinion of the tropics. Up to this time, they had supposed that the tropical zone was by nature very unhealthful, and that for this reason it could never prove of much value to white men. This success suggests great possibilities for the future of all these hot lands.

Before the Canal was built, there was little reason for travelers to visit Panama or any part of Central America, and on account of the great danger to health they kept away. The whole region, therefore, was little known. Now the Canal is one of the central points of interest for the whole world, and many persons go there to see it.

c. Its effect on travel

The Canal is about forty miles long. It takes about ten hours to pass through it. The vessel, soon after entering, has to be raised eighty-five feet; and it has to be lowered again at the other end of the Canal. This raising and lowering is done by locks, such as are common in canals in the United States (Fig. 84). The chief difference is that, since this is a canal for the largest ocean vessels, the locks are far larger. Can you imagine the view backward from the ship after it has been raised eighty-five feet?

Much of Central America is mountainous, like Mexico (Fig. 160); and one of the disappointments that some people experience as they approach the Canal is that the land about it is so low and level. This is one of the reasons why this was a favorable location for it; yet there

is one place, called the Gaillard Cut, where it was necessary to dig through a hill 300 feet high. This is one of the most interesting parts of the Canal to visit. Can you imagine some of the conversation that might be overheard on a vessel as it neared and passed through this section?

1. How many tourists be expected to enjoy the voyage to Juneau?

Review questions

2. Name some of the things of interest about Juneau. 3. Some of the points of interest on the journey to Fairbanks by way of Seward. 4. Trace two other routes from Juneau to Fairbanks. 5. What islands off the coast of Alaska are well worth a visit, and what would be seen there? 6. Name and locate our chief tropical possessions. 7. How did we obtain these, and what are our prospects for keeping them? 8. What advantages are there in a close relation between these islands and the United States? 9. Explain how the Panama Canal saves distance. 10. Show the influence of the Canal Zone on health in the tropics. 11. How does the Canal influence travel?

1. Describe a glacier. 2. Which would you prefer, a visit to Honolulu, or one to Juneau? Why? 3. Do you regard Alaska as more or less valuable to our country than the Philippines? Why? 4. The vessels of the United Fruit Company carry their goods

to Galveston, New Orleans, Mobile, Charleston, Baltimore, Philadelphia, New York, and Boston. Trace the routes they would be likely to take to these cities from Panama. 5. What goods



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Fig. 144. — An ocean steamer in a lock in the Panama Canal

Note the electric engine that is used to tow vessels through the locks. Compare this view with Fig. 84 to see how the locks work.

would such vessels be likely to take on their return voyages to the tropics?

VII. REVIEW OF THE UNITED STATES

We have seen that the forty-eight states in our Union have been settled chiefly by people who came from the East. First, immigrants from England and other countries of Europe made their homes along the Atlantic coast. Then there was a movement of pioneers westward across the Appalachian Highland and the Mississippi Basin. Finally, settlers pushed across the

Distribution of population

mountains and plateaus of the West until the Pacific coast was reached. Now (in 1926) the 117,000,000 people in the United States are distributed over nearly all parts of the country.

They are, however, by no means evenly distributed. A north and south line—a meridian—drawn through central Kansas would divide the United States

ary of Kansas would divide the people equally north and south. Where this meridian and this parallel cross might be called the “middle point” of population; for there would be as many people north of it as south of it, and as many people east of it as west of it. This point lies north and east of the center of population as indicated on Fig. 145. The term

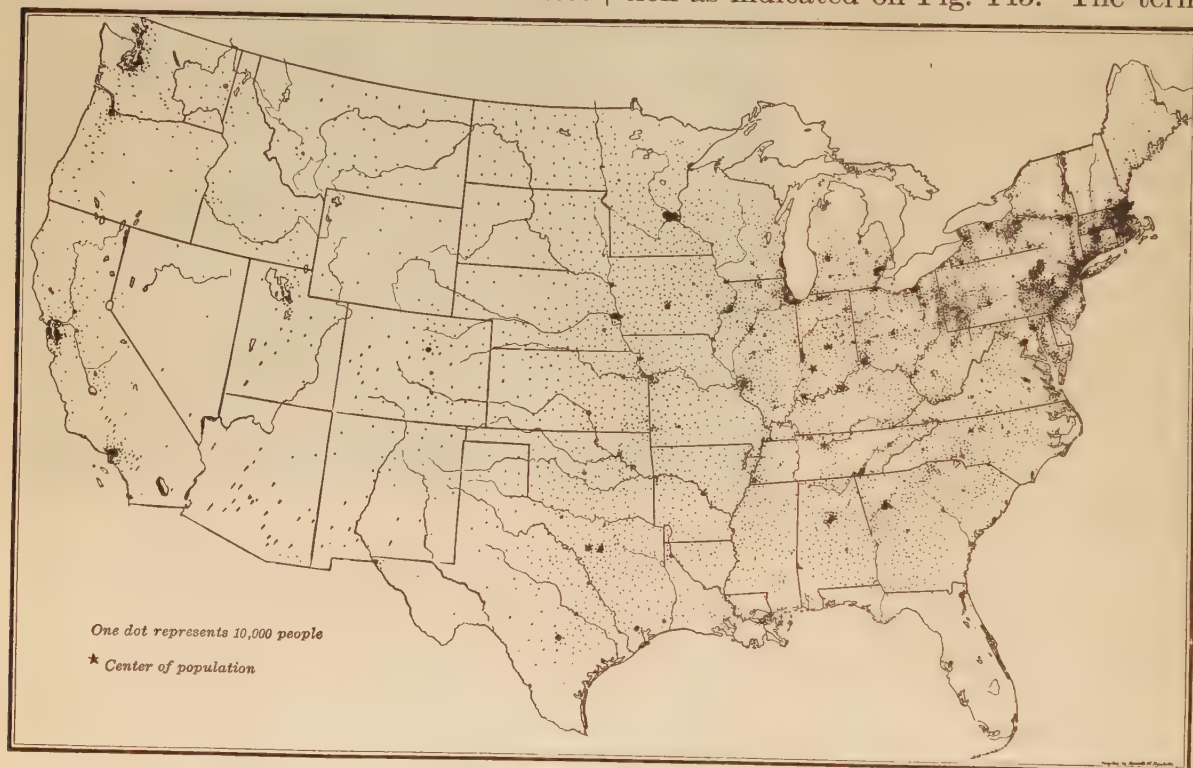


Fig. 145. — The distribution of population in the United States, 1920

roughly into two equal parts. The meridian which would divide the people equally east and west would lie far to the east—in fact, near the eastern boundary of Indiana, and farther south it would lie east of the western boundary of Georgia. Less than a fourth of the area of the country lies east of this line, yet in this area one half of the people live.

An east and west line—a parallel—drawn just north of the northern bound-

“center of population” as it is used by the Government takes into account not only the number of people but how far away they are from that point. Name the states that are most densely populated.

In the Appendix you will find a list of the twenty-five largest cities in the United States. See how many of these you can name and locate on Fig. 145. How many of them are in the eastern half? In the western half?

There are many reasons why the East is so much more densely populated than the West. Try to recall several of them. The one that is probably most important is suggested in Fig. 146.

It is the distribution of rainfall. In that map, trace the line dividing the arid section of the United States, where there is less than twenty inches of rain, from the well-watered region. Notice how near this line is to the north and south line dividing our country into two equal parts.

What portion of the West is too dry for ordinary farming? How does the rainfall vary over all that area? What states are included in it? What parts of the West have plenty of rain for agriculture? Describe the two kinds of farming that are carried on in the arid region. How does the rainfall vary in the South? In the North Central States? In the Northeastern States?

Probably the next most important reason for the difference in population between the East and West is found in the difference in the extent of mountainous areas in the two regions. Name three systems of mountains in the West that reach at

least most of the way from the Canadian boundary to Mexico. What name is applied to all these ranges together (Fig. 58)? Which states are crossed by the Rocky Mountains? Which by the Sierra Nevada? Which by the Cascade Mountains? In what states are the Coast Ranges? State two reasons why moun-



Fig. 146. — Annual rainfall in North America

tains are likely to be unfavorable to agriculture.

What extensive highland region is there in the East? What states there are mountainous? How do these highlands compare in height and area with those in the West?

The occupation that most influences population is farming. Nearly one sixth of all the workers in our country are engaged in that industry. Wherever conditions for farming are very favorable, there is likely to be a large population; and it is largely because the lack of rain and the moun-

How the different sections are alike in their farm products

some reasons why these are so common? Fruit is raised extensively in all four groups of states. Name the kind grown most extensively along the southern side of Lake Erie (p. 81). What kind is raised on the eastern side of Lake Michigan (p. 90)? What kinds come in large amounts from California, Washington, and Oregon (pp. 132, 135-7)?

The South enjoys many advantages over the other sections for farming. Its abundant rainfall, fertile soil, and warm climate allow it to raise

Advantages for farming that the South enjoys over other sections of the United States

nearly all the crops grown elsewhere in the United States, and several others besides. Its most important crop is cotton, which is grown there far more extensively than anywhere else in the world. Show the area on the map that is suited to cotton, and name the principal cotton states (Fig. 101). It is the only section of the United States that can grow sugar cane. In what state is cane



From the Fourteenth Census of the U. S.

Fig. 147. — Corn production in the United States

tains make many parts of the West so unfavorable to agriculture that it has so few inhabitants. The North Central States take the lead in the production of farm crops; the Southern States rank next.

In spite of many differences in the crops of these sections, there are certain farm products that are found in almost every place where there is farming. One of these is hay; another is cattle, together with milk and butter; a third is poultry; a fourth is potatoes; and a fifth is fruit, particularly apples. Can you suggest

chiefly produced (p. 105)? What outlying possession of the United States produces great quantities (p. 147)? The South also produces rice and large quantities of tobacco; and there is only one other section that grows citrus fruits. What section is that (p. 140)? The South comes nearer supplying itself with all the kinds of food that are needed than any other portion of our country.

In spite of the advantages of the South for agriculture, the North Central States are our most important section for the

production of food. While corn is grown in most parts of our country, the noted

Corn Belt lies entirely in these states (Fig. 147). Name the states included in it. The reason for this fact is that the soil and climate of these states

are better fitted for this crop than the soil and climate elsewhere. The presence of so much corn makes it possible to fatten great numbers of cattle and hogs, for corn is the best feed for fattening those animals.

Wheat as well as corn is a noted crop of this section. Fig. 148 shows how extensively wheat is grown in the United States. Note how superior the North Central States are to any other entire group in its production. Name the states which lead in this crop. Again, it is the soil and climate that allow such great success in the cultivation of wheat. Thus, we owe our supply of meat and bread more to the North Central States than to any other part of our country.

Fig. 145 shows that the Northeastern States and those bordering the Great Lakes are the most densely populated portions of the United States. What is the principal reason for this? It cannot be due to agriculture, because much of the surface is very poor farm land. Show that this is true.

It is partly due to coal, the most important mineral. There is one state in this section that mines nearly one third

of all the coal mined in the United States. Name it. What can you tell about the kinds of coal it produces and the quantity of each (p. 77)? Name some of the "coal cities" (p. 77).

Yet the dense population cannot be due to coal alone, for there are other sections that are well supplied with it. Show what they are (Fig. 149). How does the West compare with the East in abundance of coal?

It is iron ore and other metals, together with coal, that largely explain the dense population there. Iron ore ranks next to



From the Fourteenth Census of the U. S.

Fig. 148. — Wheat production in the United States

coal in value as a mineral. Where does that ore come from (p. 78)? Describe the course it takes to reach Detroit; Cleveland; Buffalo; Pittsburgh (Fig. 86). In what state of the North Central group is copper mined (p. 87)? The Western States, however, mine much larger quantities of metal. Which two lead in copper production (p. 139)?

What use does the East make of iron ore? How are the articles that New England manufactures from it different from

Why the Northeastern section of the United States is most densely populated

those of Pennsylvania and the states surrounding it (p. 78)? Why is there such a difference?

Skill in manufacturing other things than iron goods is another reason for the dense population of these states. In one section, great quantities of cotton goods,

The same can be said of the North Central States. These two sections now supply only a very small fraction of the lumber they require. In many places their forests have been destroyed, as have those west of Lake Huron (p. 86).

Where we are now getting our lumber



Fig. 149. — Coal and iron in the United States

woolen goods, and leather goods are made, even though that section produces no cotton and very little wool or leather. Which states are engaged in such manufacturing (p. 79)? Name and locate some of the cities that are occupied with one or more of these industries. What kinds of factories are found in Detroit (p. 85)? In Chicago and vicinity (p. 92)? In Minneapolis (p. 95)?

Lumbering used to be a very important industry in the Northeastern States, though little timber is cut there now.

The South is now following the example of these other groups of states in the destruction of its forests (p. 116). The timber in the South is being so rapidly exhausted that the Pacific Northwest may soon be our principal source of supply. What do you remember about the kinds of trees found there, and their size (p. 137)?

Besides our paved highways, the chief means for transportation of goods from one part of our country to another are waterways and railroads. By far the



Fig. 150

most important waterway is the Great Lakes system. How are they connected by water with New York City (p. 73)? Trace the route from Duluth and from Chicago to New York. What goods are carried east on these lakes (p. 84)? What goods are carried west (p. 87)?

The railroads carry many times as much freight as the rivers. Fig. 63 suggests what a network of railways we have, though it shows only the most important. What is our greatest railroad center (p. 92)? Explain its importance. What other great railroad centers do you find in the North Central States?

Our greatest port is New York. It receives and sends away about as much freight as all our other ports together. Try to give a reason for such impor-

tance. Name one important port north-east of New York, and two others south-west of it. The two leading ports in the South are New Orleans and Galveston. Locate each, and state some of their advantages (p. 114). What port on the Pacific coast is located 100 miles up a river, like New Orleans? Name and locate two other prominent ports on the Pacific coast.

Name the dependencies of the United States and locate each. Which of them seems to you most valuable?

Why? What important products are furnished by Alaska?

What products do our tropical possessions supply that cannot be raised in large quantities in our own country? In what ways is the Panama Canal of importance to us?

The value of our dependencies

VIII. OTHER COUNTRIES OF NORTH AMERICA

1. Canada and Newfoundland

Canada is a land of enormous area, being about as large as the United States

and Mexico together. Only a narrow strip bordering the United States, however, has been settled. This strip averages hardly 200 miles in width. Estimate its length from ocean to ocean, and the part of the entire area which it forms.

Why have the people kept so close to the southern boundary? Fig. 151 suggests some of the reasons. North of a line that is

shown there, neither trees nor any other valuable kind of plant can grow, because

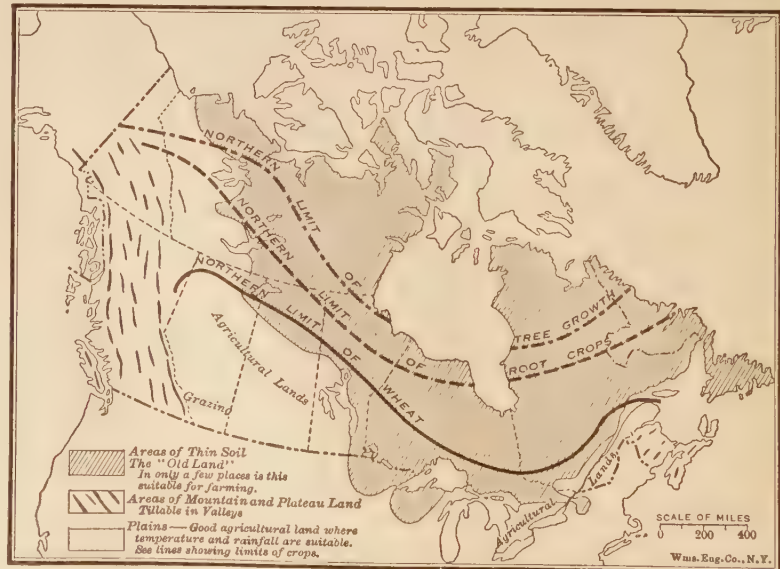


Fig. 151. — Farm lands in Canada

the average temperature, even in July, is under fifty degrees. How much of Canada can you estimate is thus made nearly useless by the cold?

The same map shows what a large portion of the country has very thin soil—in most parts too thin for farming. It is now largely covered with forests, which

In Nova Scotia and New Brunswick (Fig. 159) the surface is rough, as in New England, and much of the land is ill suited to farming. Yet fruits and vegetables, particularly apples, potatoes, and turnips, are grown successfully, and dairying is carried on much as it is in our northern states.



Fig. 152. — Harvesting wheat, Saskatchewan

© Brown Bros.

will probably, on that account, not be cut down to clear the land for farming. Note how little good land is left along the St. Lawrence River and north of the Great Lakes. The extreme cold and the thin soil are the chief reasons why the settlers of Canada have kept so close to the southern boundary.

A large part of the boundary between the United States and Canada is only an imaginary line, and there is nothing in the surface or climate that suggests a change from one country to the other. As might be expected, the farm products are very similar to those of our northern states.

Similarity of
our northern
states and
Canada in
farm products

Along the St. Lawrence River and north of New York, Pennsylvania, and Ohio, wheat, rye, and oats and many kinds of vegetables are raised. Grapes, apples, and peaches are also common, as in western New York, northern Ohio, and Michigan.

Across from Minnesota, North Dakota, and Montana, an immense area is devoted to wheat. Oats and rye are also important crops, as in those states.

Just to the east of the Rocky Mountains, in Alberta (Fig. 159), it is dry. Much of the land there is on that account given over to cattle and sheep, as it is in western Montana, while the irrigated sections produce potatoes, alfalfa, and fruits.

In the same way, British Columbia resembles Washington to the south of it. The chief products in its fertile valleys are apples, pears, and other fruits, hops, and vegetables. Grazing is common in the dry sections.

the west winds that blow regularly across it make the coast climate surprisingly mild in winter. Flowers bloom in the gardens at Victoria and Vancouver (Fig. 159) all the year round. East of the Rocky Mountains the west winds have



© Ewing Galloway

Fig. 153. — Apple-blossom time in Nova Scotia

Can you see any differences between this country scene and those near your home? Will pupils in all sections of our country answer this question in the same way?

Montreal used to attract winter visitors by building magnificent ice palaces, and many people came to think of Canada as a cold country, even in summer. They could understand why southern Ontario might raise products similar to those of our northern states, for it lies as far south as many of them and its climate is made mild by the surrounding lakes. Other portions of Canada, it was thought, could never produce much because they lay so far north.

Recent years have greatly changed this belief. British Columbia is farther north than northern Maine, but the North Pacific Ocean is twenty degrees warmer than the North Atlantic, and

little influence on the temperature, and the winters are very cold. At Edmonton, in Alberta, the temperature sometimes falls to forty-five degrees below zero, and in other parts of the central provinces it is still colder.

The summer, however, is the important season for the farmer. Although frosts last late in the spring and come early in the fall, midsummer days are not only warm but much longer than ours. This latter fact is very important in the growth of wheat and other crops. At Edmonton on June 21st the sun shines for about sixteen hours. Thus the long days make up to a certain extent for the short summer and the slant at which the sun's rays strike the earth.

Since only an imaginary line separates much of the United States from Canada, it would be easy for trouble to arise here if there were bad feeling between the two countries. Yet there has been no serious difficulty between us for more than 100 years, and there is not likely to be again. We are too much in need of each other not to be good friends.

Canada has an enormous amount of forest, while ours is rapidly disappearing. There will always be a very extensive demand for wood for building purposes, furniture, farm implements, and paper. A single issue of the *New York Sunday Times* sometimes requires as much as 1,000 tons of paper. One ton of such paper requires one and two fifths cords of pulp wood, which is about one fourth as much as grows on one acre in the forests of northern New England and eastern Canada. Knowing these facts, you can figure out how many acres of such forest one large Sunday paper may consume. Canada must be a great source of supply of wood for us.

Canada has large quantities of coal in Nova Scotia, British Columbia, and Alberta (Fig. 159), though it lacks coal in Ontario and Quebec. Ontario, however, has rich mines of iron ore, copper, nickel, gold, and asbestos between the Great Lakes and Hudson Bay. On the other

hand, we lack coal in New England, opposite Nova Scotia, and in the Pacific coast states, opposite British Columbia; while we have enormous quantities of it in Pennsylvania and other states opposite Ontario.

Again, Canada is engaged mainly in agriculture. Montreal, the largest city, and Quebec manufacture lumber, flour, shoes, butter and cheese, railroad supplies, and many other products. Toronto and Winnipeg produce meat, flour, and other foods, and on the two coasts fish are prepared for the market; but manufacturing on the whole is not exten-



© Ewing Galloway

Fig. 154. — In the Canadian Rockies

The Rocky Mountains in Canada are famous for their scenery. The snow extends farther down the slopes than in our country, and there are many beautiful lakes. This body of water is called Lake Louise.

sive. The United States, however, is becoming so great a manufacturing nation that it must import much food and must find markets in other countries for its manufactures. Thus in a third way we are in a position to supply each other's

wants. As might be expected from these facts, Canada trades more with us than with any other country.



© Publishers' Photo Service

Fig. 155. — A member of the Royal Northwest Mounted Police

These men preserve order and protect the lives and property of people in northwestern Canada, where there are few people. They often travel long distances to catch criminals or to save lives.

Not only is the settled portion of Canada very long and narrow, but the people are naturally gathered into groups that are separated from one another. Fig. 66 shows that Maine extends so far north as to separate the three coast provinces from Quebec. A vast forest lies between the settled part of Ontario and Manitoba; and the Rockies form a lofty wall between Alberta and British Columbia.

How the different parts of Canada are kept in close touch with one another

What holds these sections together? One thing is the excellent government. The nine provinces form a union called the Dominion of Canada, which is a part of the British Empire. Ottawa, in eastern Ontario, is the capital.

The principal railroads and waterways extend east and west and are very helpful in keeping these sections in close touch with one another. Canada has more miles of railroad, considering its population, than any other country in the world except Australia. Three of its roads extend entirely across the continent. Trace them from coast to coast and locate the leading cities upon them (Fig. 159). How many pass through Winnipeg? Note in what cities they end on the two coasts. The largest cities in Canada are Montreal and Toronto. How many of these railroads run through them?

A great deal of use is made also of the Great Lakes and the St. Lawrence River in travel and commerce east and west. Trace the course of goods from Fort William or Port Arthur on Lake Superior to the mouth of the St. Lawrence River (Fig. 159). This route has some advantages over our own from Duluth to New York City. Can you suggest how?

Newfoundland is not a part of Canada, for it is an entirely separate colony of Great Britain. Its interests are very different from those of most of Canada, more than one fourth of its entire population being engaged in fishing. The waters near the coast of Newfoundland, known as the Grand Banks, swarm with codfish; a good share of the world's supply of cod comes from that vicinity.

Why Newfoundland is separately mentioned

1. Consult a globe to see why aviators who cross the Atlantic fly over Newfoundland. 2. Does the globe also help to explain why fishermen from Europe went there to fish soon after the discovery of America? 3. Compare the area of Canada with that of the United States. 4. Where is the settled part of Canada? 5. In what ways are our northern states and southern Canada alike? 6. How can Canada raise crops so similar to our own when it lies so far north? 7. State some reasons for close friendship between Canada and the United States. 8. What connects the eastern and western parts of Canada? 9. What do we get from Newfoundland?

Review
questions

10. What greater difficulties have the Canadian

Suggestions
for extra
work

railroads in winter than our railroads have? 2. If you were going to live in Canada, what section would you choose? Why? 3. On Fig. 58, trace a water route north

of the mainland of Canada between the Atlantic and the Pacific oceans. Why cannot such a route be used? 4. Compare Fig. 159 with Fig. 146 to see what parts of Canada you would expect to



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Fig. 156. — A store in the Canadian Northwest

There are many of these general stores in the northern wilderness, where trappers and Indians trade. How many kinds of wares do you recognize?

make the best homes for large numbers of people. Use what these maps tell you about rainfall and elevation. Are these parts near the section where most of the cities are located?

2. Mexico

If you were planning a short visit to Mexico, there is one place above all others that you would want to see; that is Mexico City.

Plan for a
short visit to
Mexico

How could you reach it by rail from where you live? On Fig. 59 trace the all-rail route that you might take. If you went from New York by boat, you would probably land at Vera

Cruz on the Gulf coast. Find this port (Fig. 160). Very likely your vessel would stop at Havana on the way. Trace this route.

At Vera Cruz you would probably feel very uncomfortable, no matter what time of the year you arrived; for it lies well within the tropics and is on a lowland. Every day, therefore, is hot.

On Fig. 160, measure its distance south of the tropic of Cancer, the northern border of the tropics.

You would not care to stop here long, because it is unhealthful as well as hot. The distance by rail from Vera Cruz to

that entirely surround it. The ancient volcanoes, Popocatepetl (Fig. 162) and other mountains about forty miles away, can be seen plainly, with their wooded slopes and snow-covered peaks.

You would find the drainage system of



Photo by Elmendorf © Ewing Galloway

Fig. 157. — Mexico City

What signs do you see of a style of building unlike ours?

Mexico City is a little more than 250 miles. On leaving Vera Cruz the road first crosses a low plain. Here the rainfall is heavy, plants grow thickly, and insects are abundant. Then the road begins to rise; it has to climb 8,300 feet above sea level before it comes down into the valley of Mexico City. How much more than a mile is that? How would you expect the plant life and the scenery to change as you climbed?

Mexico City is a very interesting and attractive city. Its parks, drives, and public buildings are especially beautiful, and its scenery can hardly be surpassed. In the distance are mountains

the surrounding territory; and other cities not far distant. Mexico formerly belonged to Spain, and Spanish is still the chief language. There are many customs in Mexico that seem strange to us.

Mexico enjoys three great advantages. The first is the delightful temperature in a large part of the country. Mexico City is located in a valley on the plateau at an elevation of more than 7,000 feet above the sea (Fig. 160). Although the plateau becomes lower toward the north, Fig. 160 shows what a large area is at least 5,000 feet above sea level. Even though much

the city especially interesting. The city is located in the bottom of a bowl-shaped basin; formerly water from the surrounding mountains sometimes flooded its streets for weeks. In one great flood 30,000 persons were drowned. The city was for a long time unhealthful on account of the dampness. In 1900 a canal thirty miles long was completed to lead away the waste waters.

There are many other interesting sights in or near the city. Among these are the old-style buildings in the city (Fig. 157); lakes in

Advantages
that Mexico
enjoys

1. Its pleasant
climate

of this area is in the tropics, the tropical heat is not felt here. The temperature of Mexico City and the surrounding region is like that of late spring in most of the United States. The attractiveness of this section is shown by the great number of its inhabitants, for it is the most densely settled part of Mexico.

The many different kinds of farm products are another advantage. The

2. Its many kinds of farm products

rainfall is heavy in the south, but is less toward the north.

The part next to the United States is as dry as Arizona and New Mexico. With such a variety of temperature and rainfall, Mexico grows about

all the kinds of plants found between the equator and the pole. On the hot and damp coastal plains rice, rubber trees, sugar cane, bananas, and other tropical fruits and trees flourish. On the slopes leading up to the plateau are coffee, cotton, tobacco, and other semi-tropical products. On the plateau itself are corn, wheat, beans, and other products of the temperate zone. On the low, level land in Yucatan one of the most important plants is *sisal*, from which binding twine is made. We use large amounts of such twine for

binding wheat and oats. In Yucatan and the arid northwest as many as 30,000 cattle sometimes graze on a single ranch.

The variety and abundance of minerals give Mexico its third great advantage. It has produced more silver than any

other country in the world, and it still produces more than any other. There are rich gold mines also, besides large deposits of copper, iron, lead, quicksilver, and other minerals. Its oil wells are among the richest in the world. Vessels sail almost every day from the ports of Tampico and Tuxpam (Fig. 160) with oil for the United States or Europe.

3. Its variety and abundance of minerals

Thousands of our citizens have been attracted to Mexico by opportunities for business. They have bought cattle ranches in the arid northern section; oil wells on the Gulf coast; mines in the interior;

The interest of our citizens in Mexico



© Keystone View Co., Inc.

Fig. 158. — Sisal in Yucatan

What plant that you sometimes see in the United States does this plant look like? Twine is made of fibers in the long leaves.

rubber, sugar, and coffee plantations. They have helped build railroads. The lives and property of these men, however, have not always been safe, for there has been much disorder and civil war in this southern republic since the revolu-



pletely separated from one another, it is not easy to form the business and

3. Character of the people friendly relationships which are needed for peace and progress. The twenty-eight states are much like independent countries and are less closely united to the national government than our states. The character of the citizens varies greatly in the different states of the republic. Some states are composed almost entirely of people of Indian blood; in others a large majority of the inhabitants are of mixed blood, while in the most highly developed states there is a large percentage of

people of pure Spanish descent. This last class is well educated and progressive. The great majority of the other classes lack education, have little ambition to improve their condition, and are neither skillful nor industrious workers. In consequence they may easily be led by dissatisfied leaders to take up arms against the government. Only a strong government therefore can preserve order, and its greatest aid will be the new program of more and better schools and more farms and better farming methods.

1. Show how you could reach Mexico City from where you live. 2. Describe some of the scenes on the route and in Mexico City. 3. In what way is the

climate attractive on the plateau? How can it be so pleasant in the tropics? 4. Why has Mexico a great variety of farm products and what are the principal crops? 5. What minerals does it produce?

1. The rivers of Mexico are short and of little use for transportation. Why?

2. What do you imagine to be the difficulties in traveling overland from Vera Cruz to Acapulco? 3. Are there as strong reasons for friendship between the United States and Mexico as there are between the United States and Canada? Why?

Suggestions
for extra
work



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Fig. 162. — A country scene in Mexico

Popocatepetl is seen on the right. What do you see in this picture that is shown also in Fig. 20? What are the signs that this is a dry or arid region?

3. The Caribbean Region

Even though one sails south from New York toward the West Indies and Central America in January, the third morning out is likely to bring warm weather. Then one puts on the lightest summer clothing, the only kind he needs until his return. At Colon, on the coast of Panama, 70 degrees is considered

Attractions of this region to travelers

1. The climate

The growing crops are of great interest to the traveler; for example, the bananas, coconuts, coffee, and rubber.

2. The farm products

Sugar cane, tobacco, and many kinds of vegetables are also raised in most parts of this large region. Jamaica produces great quantities of bananas; Costa Rica is especially noted for bananas and coffee; and Cuba for sugar. Locate each of these countries (Fig. 160).

The appearance and customs of the people are as unlike our own as their

3. The people

fruits and vegetables. Some of the people are well educated, however, with homes, dress, and customs much like ours. These are mostly whites. In most of Central America and in several of the islands Spanish is spoken, as it is in Mexico; in other islands the language is English or French or Dutch.



©Underwood and Underwood

Fig. 163. — Loading a steamer with bananas, Kingston

a low temperature and 95 degrees very hot. This gives a difference of only about 25 degrees between the warmest and coolest weather—only about one fourth the difference between the hottest summer weather and the coldest winter weather in New York or Chicago. Temperatures in the lowlands in the Caribbean region are much like those at Colon; for all this region lies within the tropics. Many of our people go to the tropics for the winter because of such a climate.

The inhabitants of the West Indies understand better than those of the mainland how to entertain foreigners, and their roads are better for touring. Largely for such reasons, travelers from the United States have been more attracted to the islands than to Central America. The most important winter resorts are Havana in Cuba, Kingston in Jamaica, San Juan in Porto Rico, and Nassau in the Bahamas (Fig. 165). Locate each of these islands and cities on Fig. 160.

While there are well educated and prosperous people in all these countries, many of them have little education and would seem to us very poor. In Jamaica, for example, the homes of the natives are the simplest huts, having usually only one or two small rooms, a dirt floor, no chimney, and scarcely any furniture, not even a stove. The chief use of their houses is protection from the sun and rain, though the roof may leak in the wet season, and the floor become muddy. Men and women possess very little clothing, and use but little money. Many living about Kingston supply fruit and vegetables to the city. They generally carry their produce to market in



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Fig. 165. — Avenue of palms, Nassau

baskets on their heads, walking both ways, even though they live ten or fifteen miles out in the country. They start by midnight or earlier with a few coconuts, bananas, short stalks of sugar cane, a live hen or goose, or other articles, weighing in all from twenty to fifty pounds. They spend the morning at the market selling their wares and then return with coins worth perhaps twenty-five or fifty cents in our money.

Cuba is more prosperous and makes better use of its resources, than the other Caribbean countries. Many of its people belong to Spanish families that have been in Cuba for several hundred years. The island



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Fig. 164. — Selling fruit and poultry in Havana

This is what one would see in many of the cities of Cuba. Can you name the kind of fruit this man has to sell? Is the poultry dressed or alive?

Importance
of Cuba

has valuable deposits of iron ore and other minerals and its farms produce sugar cane, coffee, tobacco, and hemp. It is one of the greatest sugar-producing regions of the world. Estimate the distance of Havana from the southern tip of Florida.

is a drought that is just as bad. In addition, destructive hurricanes are frequent. Farming is, therefore, less certain here than in the United States.

Earthquakes and eruptions of volcanoes have often caused great damage. For example, San Salvador (Fig.

160), the capital city of Salvador,

was destroyed so many times by earthquakes that it was rebuilt in a new location. In 1902 one of the most terrible eruptions ever known occurred on the island of Martinique, one of the Lesser Antilles. After being quiet for about fifty years, Mont Pelée suddenly burst forth and completely destroyed the beautiful city of St. Pierre at its foot. In a few minutes all its 25,000 inhabitants were killed by the steam, gases, and hot ashes that descended upon them. Locate this island. More recently Guatemala City was almost entirely

2. From earthquakes and volcanoes



Photo by Elmendorf © Ewing Galloway

Fig. 166. — Mont Pelée, from the water
"Mont" is French for Mount (p. 168).'

To many of us the steady heat of these countries would seem a great hardship.

Hardships
that these
countries
suffer

1. From the
climate

Though the thermometer does not go so high as it sometimes does with us (p. 168), the heat continues day and night during all seasons of the year.

There are far worse hardships, however, than the heat. The most common winds blow from the northeast and bring much rain, especially to the north and east coasts. Now and then they cause serious floods; and sometimes there

is a drought that is just as bad. Partly on account of earthquakes, buildings in this region are seldom over two or three stories in height.

Another serious danger is that of disease, particularly of fever and other ailments common in the hot and undrained lowlands. The lands along the coast of the Caribbean Sea in Central America are very fertile and could produce vast quantities of food, but the people fear them as they do the plague. They avoid the eastern

3. From diseases
on the lowlands

coast in all these countries; as in Mexico, they make their homes on the highlands, which are well toward the west. They therefore lose the use of much of their best soil. The islands suffer in the same way. All these sections must be made healthful before their full value to man can be enjoyed.

Revolutions in some of these countries are almost as great a nuisance as earthquakes. All the Central American countries except British Honduras are republics. Name them. Cuba also is a republic, and the island of Haiti is divided into two republics, Haiti in the west and the Dominican Republic in the east. But many of the people are so ignorant that they are easily misled by selfish politicians. Such men sometimes can find enough followers to overturn the old government and start a new one which they can control. In such a revolution people are killed, property is destroyed, and the country suffers in many ways.

Foreigners have been of much help in overcoming

some of these difficulties. British Honduras on the mainland,

Jamaica, Trinidad, and several of the smaller islands are British possessions (Fig. 160). These have been free from revolutions, and on most of them attention has been given to farming, road building, and safeguarding the people's health. These countries,

therefore, are fairly prosperous and orderly. Trinidad is the island from which most of the asphalt for paving our streets is obtained.

The country, perhaps, that has done the most to keep order here is the United States, though our possessions have a smaller total area than those of the British. Porto Rico is under our control (p. 147), as are also several of the Virgin Islands just east of it. Cuba would again look to us for help if it were in trouble; and at different times we have helped to keep order in Haiti and in Nicaragua.

2. Influence of the United States



(© Publishers' Photo Service)

Fig. 167. The market square in Port au Prince, Haiti

Our business men, as well as our Government, are doing great services to these countries. Here and there is one who has established a coffee plantation or a cattle ranch or a fruit farm; but the work of the United Fruit

3. Benefits brought about by a large American company.

Company is on a grander scale and suggests how extensively these lands may be improved.

The lands held by this company are almost entirely lowlands, many of them on and near the eastern coast, which the natives have long avoided. Some of it is mountainous, but most of the land can be cultivated. It is rapidly being cleared and put to use. The principal crop is bananas. Sugar cane is the product next in importance. Other products are coconuts, cocoa, oranges, and rubber.

a. The farm lands held by this company

b. The uses it makes of these

Even before our Government obtained control of the Canal Zone in 1903, this company had begun to make very strict rules to protect the health of the people, just as our Government did when it built the Panama Canal (p. 148).

The company does more than cultivate the soil; it transports its products to many countries, and for this purpose it owns or controls several scores of ships.

c. Its transportation of goods and passengers

Until this company was formed, in 1899, there were scarcely any good deep-water harbors on the east coast of Central America; now there are

a half dozen, made by this company, and others have been improved in regions where it owns property. The vessels carry their products to Galveston, New Orleans, Mobile, Charleston, Baltimore, Philadelphia, New York, and Boston. Locate these cities and trace the routes (Fig. 315). The chief cargo is bananas, of which a single ship often contains 40,000 or 50,000 bunches. The principal port for this fruit is New Orleans. Can you suggest why? New York ranks next.

In spite of its large production, the company raises

fewer bananas than it wants; so it buys many more from independent farmers. The company also does a general freight and passenger business, carrying thousands of passengers to and from the tropics.



Photo by Elmendorf © Ewing Galloway

Fig. 168. — Main Street in St. Thomas

St. Thomas, on the island of the same name, is the chief town of the Virgin Islands. Until recently its name was Charlotte Amalie. These islands were purchased by the United States from Denmark in 1917.

The company's land extends up the valleys from the coast, often for a distance of fifty miles or more, and hundreds of miles of highways and railroads for transporting men and materials have had to be built.

All together this company has spent about \$200,000,000 in the tropics, and it now employs about 60,000 men. There are other excellent farm lands in these countries that have never been properly cultivated. This company's example is an encouragement to the natives and others to undertake their cultivation. Its many excellent roads must lead to more road building. Its rules for safeguarding health are likely to be copied by others. Do you see other good results from its work?



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Fig. 169. — Central Park in Havana
The opera house is seen on the right.

1. What temperatures can be expected in these tropical countries? 2. How great is the difference between the highest and the lowest temperatures in a year? 3. Name the principal agricultural products of these countries. 4. Name and locate the principal winter resorts. 5. Why has Central America been less popular as a winter resort than the islands? 6. Describe the life of the poorer people in Jamaica. 7. What peculiar hardships are due to the climate? 8. Tell about the hardships due to volcanic eruptions and earthquakes. 9. What danger is feared from the lowlands, and where is good land avoided on that account? 10. What is the form of government in most of these countries? 11. Why are revolutions especially common? 12. What sections are dependencies of the British? Locate each. 13. What posses-

sions has the United States in this area? Locate them. 14. What kind of land has been selected by the United Fruit Company, and on which coast is that in Central America located? 15. Tell about its transportation of goods and people abroad.

What ports in the United States do its vessels reach? 16. Mention some ways in which its work is helpful to these countries.

1. What effect does the United Fruit Company seem to you to have upon the friendship between the United States and these tropical countries? 2. Try to name other uses of the banana besides that of food in the raw state. 3. Try to explain why a dozen bananas, which spoil very easily and must be brought by fast freight 1,000 miles or more, often cost less than a dozen apples raised in our own orchards.

Suggestions
for extra
work

This book tells you about the parts of the earth's surface with which you ought to be acquainted. Part of what you should learn is given in the text. Review what you have already learned on pp. 7, 16, 19-20, and 26 about how to study the text. Other facts that you should learn are given in the maps and pictures. A map, as we have seen (p. 34), is really a picture of a part of the earth's surface. For that reason, it tells you many things that it would be very hard to tell you in any other way. Does not a picture of someone that you know tell much more than you can tell in words? Maps ought, therefore, to be studied very carefully.

Whenever you come to a new map, you should try to imagine how the part of the earth that it represents would appear if you could look down upon it from a great height.

Political maps, such as Fig. 46 or Fig. 59 or Fig. 63, tell you less about the appearance of the country than the other maps, because each color on such a map represents a country or a state, and the surface of one country or state may look much like that of another next to it. In studying political maps, therefore, you should pay close attention to the size and shape and name of each country or state that is shown.

Physical maps, however, like Fig. 58 or Fig. 170, or combined physical and political maps, like Fig. 61 or Fig. 66, show you how high each part of the land is above the level of the ocean. In studying such maps you should try to imagine how the high regions and the low regions would appear. In this book, brown areas are high; the darker

the brown, the higher the land they represent. Green areas are low; the darker the green, the lower the land they represent.

In studying the physical maps, the relief maps, like Fig. 60 or Fig. 62, will be a great help to you. If there is a relief map that shows the same part of the earth's surface that is shown by a physical map, you should turn from one to the other and study them together. You will find that the brown areas really *look* higher on the relief maps, and the green areas lower. Compare Fig. 58 with Fig. 60. Soon you will be so used to the colors that you will not need a relief map to make the green areas look low or the brown areas high. If you are studying a map, such as Fig. 66, that has no relief map corresponding to it, you should find the area that it represents on some relief map that you have already studied. Find on Fig. 62 the area shown by Fig. 66.

When you first look at a map, read the names in large type but do not try to remember them. You are asked to refer to them so often in reading the text that by the time you have finished your study of the text you will remember most of them. Just as you review sections of the text, however, you ought to review what you have learned by your study of the maps. The questions on the maps in this book are to help you in these reviews.

1. What continent joins North America?
2. By what are they joined?
3. What two large bodies of water go far into North America?
4. Name a gulf on the eastern coast.
5. One on the western coast.
6. Name a gulf that lies within a gulf.
7. Name a bay that lies within a bay.
8. What two peninsulas are on the eastern coast?
- 9.

How to
study
maps

3. Relief
maps

1. Political
maps

2. Physical
maps

Map ques-
tions on
North
America

What two on the western? 10. Name the Great Lakes in order from west to east. 11. Where is the greatest mountain system of North America? 12. Name and locate four mountain chains that are parts of this system. 13. Where is the second largest mountain system? 14. What can you say of the country between these two mountain systems? 15. What and where is the greatest river system of North America? 16. Trace the longest river. 17. Name the countries of North America. 18. Which has the greatest area? 19. Name the countries that lie within two zones. 20. Which lie within a single zone?

21. How many states are there in the United States? 22. Name the largest state; the smallest. 23. Compare the sizes of the states in the western half with the sizes of those in the eastern half. 24. What states border on the Great Lakes? 25. What states are touched by the Missouri River? By the Mississippi River? 26. What state lies farthest north? South? 27. What state consists of two parts separated by water?

28. What are the states in the group known as the Northeastern States? 29. How many of them have seacoast? 30. Name the states that border on Lake Erie; on Lake Ontario. 31. Where is the New York State Barge Canal? 32. Where is Niagara Falls? 33. Name and locate five rivers in these states. 34. What are the four largest cities in the Northeastern States? 35. Locate Pittsburgh; Buffalo; Washington; Newark; Providence. 36. Trace the principal highway from Boston to Pittsburgh and name the principal cities through which it passes.

37. Name the states of the North Central group. 38. Trace a highway across this section from Pittsburgh, in Pennsylvania, to Cheyenne, in Wyoming. 39. Name the principal cities and towns through which this highway, a part of the Lincoln Highway, passes. 40. Trace highways from Louisville to Kansas City and to Minneapolis. 41. Measure the greatest distance across Lake Michigan. 42. Name and locate the four largest cities in the North Central States.

43. Name the states included in the Southern section. 44. Which ones border on the Atlantic Ocean? 45. Which on the Gulf of Mexico? 46. Which on the Mississippi River? 47. Which on the Ohio River? 48. Into which states of

this section does the Appalachian Highland extend? 49. What seaports are there on the Atlantic coast of this section? 50. On the Gulf coast? 51. Name and locate the three largest cities in this section. (Notice the size of type on Figure 105.) 52. Beginning at Richmond in Virginia, trace an automobile route that would carry you into every state of this section. 53. Name the rivers you would cross and the principal cities through which you would pass. 54. Locate Norfolk, Dallas, San Antonio, Birmingham, Nashville, Fort Worth, and Houston.

55. Name the Western States. What three border on Canada? 56. What three on Mexico? 57. What three on the Pacific Ocean? 58. In what states are there any lowlands? 59. Locate the following mountains: Mt. Hood; Mt. Shasta; Pikes Peak; Mt. Whitney; Mt. Rainier. 60. Name and locate the National Parks in these states. 61. Locate Denver, Butte, Spokane, Tacoma, San Diego, Portland, Sacramento, and Oakland. 62. Beginning at Denver, trace an automobile tour extending through at least nine of these states. 63. Name the mountain ranges and the rivers that the route crosses. 64. Through what cities does it pass?

65. How does the width of Canada compare with that of the United States? 66. The length? 67. Where are the highlands of Canada? 68. The lowlands? 69. Give a reason why British Columbia is thinly settled. 70. Tell why Labrador has so few people. 71. Name and locate the two largest cities of Canada. 72. Where is Halifax? Ottawa? Winnipeg? Regina? Edmonton? Vancouver? Victoria? 73. Why are there no large towns near Hudson Bay? 74. Which provinces have the most railroads? 75. About how wide is Alaska from north to south? From east to west? 76. How does Alaska compare in area with the State of Texas? 77. Where does the Arctic circle cross Alaska?

78. Locate the chief highlands of Mexico and Central America. 79. Name two peninsulas included in Mexico. 80. What waters border on Mexico and Central America? 81. Locate the Isthmus of Panama. 82. Where is the Panama Canal? 83. Name and locate two high mountains in Mexico. 84. Are the principal railways of Mexico on the highland or lowland?



Fig. 170



Fig. 171



Fig. 172

PART III. SOUTH AMERICA

There are many reasons why one might expect South America to have as many inhabitants as North America. One reason is that it is much like North America in many ways. The two continents are of nearly the same size, and of the same general shape. Draw triangles to show the outline of each. Each has vast mountain ranges on the western side, and broad, fertile plains in the east. Point to such mountains and plains on Fig. 170. In each there are large navigable rivers reaching into the heart of the continent. Trace the three leading rivers of each continent (Figs. 58 and 170).

In some respects South America enjoys important advantages over North America. No part of South America, except the mountain peaks, is very cold; but a large part of North America, lying in and near the frigid zone, is too cold for farming. Locate the Arctic circle in Fig. 58. In the second place, most of South America is well watered. In Fig. 173 note how small the arid sections are. A large part of North America, on the other hand, is very dry (Fig. 146). Finally, gold and silver were discovered in South America hundreds of years earlier than in North America. This gave an early start to the settlement of that continent.

In spite of these facts, South America has developed less rapidly than North

America. One of the most important reasons is the climate. Note where the equator and the tropic of Capricorn cross the continent. About how much of South America lies in the torrid zone? Thus it is seen that the greater part of the continent is too hot for white men to work there with

Reasons for slow development

1. Character of the climate



Fig. 173. — Annual rainfall in South America

How does the area of heavy rainfall compare with that in North America?

the best results. How does South America compare in this respect with North America?

A second reason for the slow development is the lack of coal. There is, to be sure, some coal, but the amount is not great nor is much of it mined. No region ever develops its industries extensively, especially manufacturing, without coal. Why is coal so necessary?

There are many well educated people in South

3. The general lack of education

America, but they are mainly the whites,

who are fewer in number than the natives. Spanish is the language of most of these countries, but Portuguese is spoken in Brazil. The love of the educated people for beautiful things and their interest in progress are shown in the appearance of many of the cities, which have beautiful buildings, streets, and parks. Their interest in independent government is shown, also, in the fact that all the South American nations are republics except the Guianas and Surinam, which are colonies belonging to three countries in Europe.

More than three fourths of all the people of several South American countries, however, are Indians and people of mixed blood (Fig. 174); and most of these can neither read nor write. They are too ignorant to share in the government or to be reliable and skillful workmen. It is this lack of education of the common people more, perhaps, than the climate or the lack of coal that has hindered progress in South America.

Americans are likely to visit South America much more in the future than they have in the past. Where should one go, and what should one try to see? Here are suggestions for a trip

A trip to South America

1. The season to choose, and the method of travel

that might occupy six months. Since South America is mainly in the southern hemisphere, winter comes there during our summer, and we should time our visit so as to reach Chile and Argentina, the colder part, during their summer. We ought, therefore, to start in October.

Since there is no railroad connecting the two continents, we go by boat. Indeed, except in the southern half of the con-

tinent, there are few railroads connecting the countries of South America with one another. On that account our trip will be chiefly by boat.

Starting from New York for the western coast of South America, we sail directly for Panama. Six or seven days bring us to the entrance to the Canal. How would the trip from New Orleans or San Francisco compare with this in length?

At the port of Panama, on the Pacific side of the isthmus, a boat may be ready to take us south. If not, we wait for one. From now on, boats going our way are likely to be a week or so apart, and if we just miss one, we contentedly wait for the next. There is no need of hurrying



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Fig. 174. — Indian children in Peru

2. The voyage to Guayaquil in Ecuador

or fretting about delays. We must adopt the customs of the people; and they make it clear that time is not valuable to them. How do you suppose they do it?

Where do we make our first stop? Colombia lies on our left; but most of its coast is densely forested and it has no important port. If we come near enough, we may see lighters, laden with rubber, coconuts, and perhaps coffee, cotton, and bananas, putting off from the shore to an ocean steamer that is anchored in deep water.

We pass on to Guayaquil in Ecuador, crossing the equator on the way. On the fourth day out from Panama we reach the Gulf of Guayaquil and steam forty miles up the river to the city of that name.

The heat is one of the chief topics of conversation.

The temperature is not much higher than in some of our southern states in summer; but it rains 120 inches there in a year, and the hot air reeks with moisture.

The city in the distance looks beautiful with its white, marble-like buildings.

Buildings are usually white in the tropics. But a nearer view brings disappointment;

for what seemed to be marble turns out to be split bamboo plastered with mud and whitewashed. This is a land of earthquakes, and houses of this sort are little damaged by them. The cracks they cause in the mud can easily be repaired.

Although Guayaquil is the principal port of Ecuador, and has a population of

100,000, it is a wretched-looking place. Both the streets and the people seem greatly neglected. Until recently tropical diseases caused great destruction and vessels stopping at this city were in danger of being quarantined for disease



Courtesy of South American Publishing Co.

Fig. 175. — A cone-shaped volcano in Ecuador
There are several such mountains near Quito.

at the next port. That danger is now largely passed, owing to efforts of Americans in making Guayaquil cleaner and more healthful.

Along the coast of Ecuador and in this valley are very fertile plains. In the harbor we see their products being loaded into vessels for export: sugar, bananas, coconuts, and pineapples. The two things that interest us most are *cacao* and Panama hats.

The trees that bear the long pods filled with cacao beans grow from fifteen to twenty feet high. Plantations of such groves are worth a visit. The dried beans, when ground, produce chocolate; and when the oil is pressed out of the

chocolate and the remainder is mixed with starch, we have cocoa.

The kind of fiber or straw necessary for Panama hats thrives best on these low coastal plains, and the hats are manufactured in surrounding towns. It



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Fig. 176.—A cacao plantation
How many pods can you find here?

would be interesting to observe these workers making our most expensive hats, some of which sell for several hundred dollars each.

The people in these tropical countries largely avoid the low coast lands. A journey to Quito will bring relief from the heat, for it is located on a plateau 9,500 feet above sea level. How much does that lack of being two miles? The railroad running there climbs 12,000 feet over the moun-

tains before it comes down into the valley where Quito lies.

Of course there is wonderful scenery on the route (Fig. 175). What are some of the views that you would expect? The changing plant life and farm products are especially interesting.

Quito is nearly as large as Guayaquil, and not much cleaner. But everything is interesting (Fig. 178). This is a land of everlasting spring, and the sudden changes that you see from field to field are surprising. In one field the Indians may be harvesting ripe grain, while in one next to it the grain is green, and in a third they are plowing and sowing. In the same orchard there may be peach trees bearing blossoms, green fruit, and ripe fruit. Since there is no change of seasons, crops may be planted or harvested at any time.

5. In and
about Quito

In the valley everything is green; but the snow-capped mountain peaks tower in the distance; and at night the glow of fire in the crater of the volcano Cotopaxi can be seen. Find it on Fig. 170.

Would you like to take an automobile trip or a drive out into the country? This could hardly be done owing to lack of roads; in fact, there are hardly any roads at all. Even in the city, an automobile is almost useless, because there are few blocks where it can run; and in the country there are only bridle paths.

The lack of roads is one of the serious difficulties in South America. People in Colombia living in the valley of the Magdalena River or at Bogota, the capital, find it next to impossible to reach the Pacific coast of their own country by land. They must go around by way of the Panama Canal. What prevents their

4. The journey
to Quito

going across country, even though there are no roads? Examine Fig. 170 to see.

We stop at only two places on the coast of Peru. The first is Callao, the port of Lima. Callao itself is of little interest; for the low coast land north and south of it for hundreds of miles is arid. Some sugar cane, cotton, and rice are grown by irrigation. Lima is of interest as the capital and largest city of Peru, and also as the old Spanish capital of South America. The Spaniards were attracted to this region by the gold and silver mines, and the city contains many buildings, gardens, and paintings that recall the Spanish rule.

What we care most to see is the railroad leading from Callao through Lima to Oroya and the silver and copper mines at Cerro de Pasco (Fig. 177). It is one of the highest railways in the world; at one point it reaches an altitude of 15,600 feet



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Fig. 177. — The railroad leading from Callao through Lima to Oroya

Locate this railroad on Fig. 171. Does this appear to be a dry or well-watered region? See Fig. 173.



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Fig. 178. — The Theater in Quito

above the ocean. How does this compare with the height of the highest mountain in the United States? It is quite likely that the change in the pressure of the air as you reach the top would make you dizzy. At times you might hold your breath, too, as you looked far, far downward from the car windows and thought what would happen if the train should leave the track.

We return to Callao and steam on for a few hundred miles. Then we come to

Mollendo, which really has no harbor at all, only a *roadstead*, where ocean vessels are met by lighters from the shore for loading and unloading goods and passengers. Yet it is a fair example of most of the ports of South America. In addition to sugar,

b. Why a stop at Mollendo is desirable



Fig. 179. — The old Inca gate at Cuzco

cotton, and copper, which are shipped from many of the other Pacific ports, wool and tin are likely to be seen here. Mollendo is the port for Arequipa, a great center for those products. The tin comes mainly from Bolivia, which mines a large part of the world's supply. The wool comes from the sheep, alpacas, and vicunas that graze in this plateau country. A visit to one of the sheep and alpaca ranches would be interesting.

Two other places of interest are Cuzco and Lake Titicaca (Fig. 171). This lake

has an elevation of about 12,500 feet and is over 100 miles long. On it can be seen both the straw boats used by the Indians and modern steamers.

Cuzco was once the capital city of the Incas, the Indians who ruled here at the time of the discovery of America. Can you explain how the climate and even the desert coast without good harbors may have influenced them to choose this location? The Inca ruins are the great attraction at Cuzco (Fig. 179). Along one street are the remains of fourteen of their palaces.

The next stop along the coast should be either at Iquique or at Antofagasta in northern Chile. The land is a desert; Antofagasta gets its water from the Andes by a pipe line more than 200 miles long. The water costs about five cents a gallon. Yet this most barren place on the earth helps to produce flourishing crops in many other countries; for a material called *nitrate of soda*, which is the finest kind of soil fertilizer, is mined here in vast quantities. So much of it is sent abroad that it is one of Chile's principal sources of wealth. The importance of the industry can be judged from the fact that of the 71,000 miners in Chile in a recent year, 44,000 were engaged in mining nitrate of soda (Fig. 180). Our farmers are using it extensively. Have you seen any of it?

Instead of going back to the boat from the nitrate fields we travel south to Santiago by rail. Chile is a more prosperous country than any other we have visited, with better educated people, and the conveniences for traveling are better.

7. Value of the barren coast of northern Chile

8. Attractions of the central valley of Chile

It is a long journey from Antofagasta to Santiago. Estimate the distance (Fig. 171). How long is Chile itself? How wide, on the average?

As we approach Santiago, the climate and farm products remind one of southern California. That city is about the same distance south of the equator that Los Angeles is north of it. Show that this is true. Irrigation is necessary here, as it is in California, because the rains come mainly in the winter.

The city is located in the central valley of Chile, a valley nearly 700 miles long but averaging only about thirty miles in width. Most of the Chileans live in this

valley because of its fertile soil and delightful climate. Santiago is located near its northern end (Fig. 181). Find its population in the Appendix. From the city the mountains can be seen on both the east and the west. All about are fields of wheat, corn, alfalfa, and vegetables. Vineyards, also, are plentiful. A railroad extends along the valley for its entire length.

The next city which we shall visit is Buenos Aires, in Argentina. How shall we travel to reach it? The old route would

9. The journey from Valparaiso to Buenos Aires

a. The route selected

probably have been from Santiago down to Valparaiso, its port, and then by boat through the Strait of Magellan or around Cape



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Fig. 180. — A pile of nitrate in northern Chile
The nitrate is being sacked for shipment.



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Fig. 181. — The National Museum, Santiago

South Americans take great pride in their beautiful buildings. The large cities of Chile, Argentina, and Brazil are among the most beautiful in the world.

Horn. But that is a long and dismal voyage. Southward from Valparaiso it rains more and more, until in southern Chile it is rainy or foggy much of the time. Severe storms in the Strait of Magellan and about Cape Horn also make navigation dangerous.

directly to Valparaiso and then take the railroad for Argentina, makes that port especially important, although the harbor is very poor.

It is a fifty-hour trip from Valparaiso to Buenos Aires. Estimate the distance and the rate of travel per hour. What is

the distance through the Strait of Magellan by boat?

The views are magnificent as one ascends the mountains and looks back into the central valley. *b. Experiences on the mountain journey*

The highest altitude reached is about 12,000 feet, where a tunnel, completed by Americans, leads through the mountains toward Mendoza, in Argentina (Fig. 171). Note how near at hand is Mount Aconcagua, the highest peak in the western hemisphere. What is its height? Why would you expect glaciers there?

There may be delays on

this journey, for we are well within the temperate zone, and the train is likely to be snowed in; or avalanches may block the way. On account of such difficulties the road loses part of its value.

Argentina is more like the United States than any other country of South America. Chile was found to be much like California. We shall see how closely Argentina resembles our states just east of the Rocky Mountains. *c. What is seen east of the mountains*

At Mendoza there are vineyards everywhere. This is an arid region, having only about six inches of rain per year



Fig. 182. — The Trans-Andean Railway

The train is standing at a station in the foothills of the Andes.

Since 1910 it has been unnecessary to take this long voyage, for in that year a railroad was completed from Valparaiso to Buenos Aires. This transcontinental road (Fig. 182) and the Panama Canal together have made the extreme southern end of the continent much less important than formerly. Now many boats that come south through the Canal end their voyage at Valparaiso and start north again. Punta Arenas, the southernmost city in the world, located on the Strait of Magellan, suffers as a result. Valparaiso, however, gains. The fact that many passengers bound for Argentina come

(Fig. 173), but the lofty mountains supply water for irrigation. Traveling east, we first pass through an arid section where the only industry is grazing, particularly the grazing of sheep. Gradually, on account of the greater rainfall, cattle are more often seen; then wheat, and more wheat. If we visit this region during harvest, we see great piles of wheat in sacks in the fields or along the railroad awaiting shipment. Soon other crops appear, including oats, barley, flax, corn, alfalfa, and vegetables such as we raise in the United States. Finally, on the latter part of the journey, where the rainfall approaches forty inches and the summers are hot, corn is the principal product.

Throughout the 600 miles from Mendoza (Fig. 183) to Buenos Aires there is scarcely a change in the landscape. The plain is perfectly flat, with hardly a hill or even a low ridge, and no large forests. Only here and there are clumps of trees, carefully cared for by man. A journey could scarcely be more monotonous. Yet, after leaving the arid section, it is hardly tiresome; for one sees signs of prosperity on all sides. How fully would this description fit a journey across our own country from the Rocky Mountains through Nebraska and Iowa to the Mississippi River?

We are now in the most active part of South America. Buenos Aires is often called the New York of that continent,

and Rosario, a few hours' journey to the northwest on the Parana River, its Chicago. How far is Montevideo from Buenos Aires?

What makes this section so important? It is, first of all, the climate. In the temperate zones, where there is a decided change of seasons, people have most energy and make most progress. It is also due to the class of people who live here. Most of the inhabitants are white, and very many are immigrants from Europe, including many Italians. In the tropical countries that have been

10. Leadership of Buenos Aires and the region about it



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Fig. 183. — Molding and drying adobe bricks, Mendoza

Can you explain why bricks are in great demand in a country of little rainfall?

named the people move slowly and spend a large part of their time resting. But here we find energy, and we should feel much at home among the inhabitants if they spoke English instead of Spanish.

A third reason for the importance of Buenos Aires is the fact that, located at

the mouth of the Plata River, it is the outlet for a vast and very fertile region including much of Uruguay and Paraguay. The country between Mendoza and Buenos Aires gives a good idea, in its farm products, of the area for several hundreds of miles both north and south of it.

shipped abroad; and the machinery and other manufactured products that are imported. There are ships from all countries, and flags and people of many colors.

Rosario is busy with many of the same products that are important in our own Chicago. What are some of them

(p. 92)? Since the region north of it is not far from the tropics, some of the semi-tropical products that are grown in our Southern States are also to be seen here. Tucuman, far to the northwest, is a noted shipping point for sugar.

There is no need for us to stop in Uruguay; it is so much like Argentina that it might well be a part of it. Our next stop will be in Brazil. That country has a greater area than the United States, and ranks with Argentina and Chile as one of the leading

12. The principal part of Brazil to visit

countries of South America.

If a stranger had only a few weeks to visit the United States, he might be confused about the places he should choose to see. But one feels no such confusion in regard to Brazil. Most of its vast area has very few people. Since a large part of the population is found along the southeastern coast, that is the part for us to visit.

One fact may cause surprise. People in Ecuador and Peru largely avoid the coast, living far up on the highlands. This Brazilian coast is likewise mostly in the tropics (Fig. 171). There are ex-



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Fig. 184. — The Palace of Justice, Buenos Aires

What do the palms tell you about the climate here?

Finally, the ease of transportation makes this section important. Note how many railroads there are here (Fig. 171). It is easier to build them on these plains than among the mountains. The great rivers, the Uruguay and the Parana, that empty into the Plata, are navigable far inland. The Parana is twenty miles wide at Rosario.

Buenos Aires is a very attractive city, with magnificent buildings, streets, and parks. The harbor is perhaps the most interesting part; here are seen hides and meat, as well as the corn and wheat that are

11. Attractions of this section

tensive highlands a short distance inland, although they are by no means as lofty as the Andes. They are only two or three thousand feet in altitude, yet they are high enough to give considerable relief from the tropical heat. Why, then, are so many cities located directly on the coast? Name the more important ones.

One reason is that there are regular winds here, called *trade winds*, blowing from the southeast, that bring much relief. Another is that the people are more progressive than those in other South American countries and have made their most important coast cities, particularly Rio de Janeiro | and Santos, quite sanitary, so that they can live in them with safety.



Courtesy of South American Publishing Co.

Fig. 185. — Ships at Rosario waiting to be loaded with wheat

To what foreign ports would you expect this wheat to be sent? Why to Europe rather than to the United States?



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Fig. 186. — A coffee plantation in Brazil

Does this plantation appear to be on the highland or lowland, or may it be on the slope between them? What is being done to the coffee berries in the foreground?

The leading export of Brazil is coffee; that country grows more than one half of all the coffee in the world. No doubt you have heard of "Rio" coffee, so called because it comes from Rio de Janeiro. The more important port for its export, however, is Santos.

The coffee trees grow best on the highlands, at an altitude of from 1,000 to 2,500 feet. Men take care of the trees very carefully, one man having perhaps 2,000 trees in charge, and a family often from 8,000 to 10,000. The berries in

13. Facts of interest in the coffee section

which the grains of coffee are found begin to ripen in June. They have to be picked from the trees, dried in the sun as shown in Fig. 186, and then hulled. The harvest is in full swing by September and is about over in November.

harbor (Fig. 187), and it is the excellence of this harbor more than anything else that has caused the growth of the city. While coffee is the leading product in this region, others of importance are sugar

14. Reasons for the growth of Rio de Janeiro

cane, cotton, and cacao, which grow on the low coast lands and on the slopes of the highlands to the northeast. There are many cattle, also, on the highlands.

There is a serious drawback to the development of Rio de Janeiro and, in fact, of Brazil as a whole. One can

15. A serious hindrance to Rio de Janeiro and Brazil

travel by rail southwest to Uruguay, but one cannot reach the next important city to the northeast, Bahia (Fig. 171), by rail. One can go by rail from Bahia to Pernambuco, but not from Pernambuco to Para, at the mouth of the Amazon. In



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Fig. 187. — Rio de Janeiro

The harbor of Rio de Janeiro is one of the most beautiful in the world, with its mountain scenery and tropical plants.

There are many small plantations; but most of the coffee is grown on large ones. Such a plantation has its own villages or houses for the workmen; its own stores, where they can purchase most of their food and clothing; and even its own railroads for carrying the workmen to different parts of the estate and for collecting the berries. A large plantation may employ as many as 1,000 or even 1,800 men. The center of the industry is Sao Paulo, on the highland.

Although it is in the tropics, Rio de Janeiro is the second city in size in South America. The part of most beauty is the

other words, the principal centers of population in Brazil, which are hundreds and even thousands of miles apart, are connected with one another only by water. Boats are so much slower than trains, and run so seldom, that the disadvantage is great. What must be the effect upon the trade of these centers with one another? Upon the acquaintance and friendship of the inhabitants of different sections with one another?

Is a trip up the Amazon River advisable? Judge for yourself after learning the principal facts. If the trip is taken, one ought to go all the way to Iquitos

in northeastern Peru, which is about 2,600 miles from the river mouth. Find that town on Fig. 171 and trace the route to it. Ocean vessels can reach Iquitos. The entire voyage, up and back, takes about a month.

Of course it is very hot all the time. How near is the mouth of the river to the equator? No one who is unable to stand heat ought to attempt the voyage.

Very few people live along the river. There are only three important towns during this whole distance, Para, Manaos, and Iquitos. The main stops would be at these places, and one would expect to be on the boat almost the entire time. If one happened to be traveling on a vessel intended more for freight than for passengers, as would probably be the case, there would be a good many discomforts during the voyage. Can you imagine what some of them would probably be?

The principal product of this region is rubber. Brazil once supplied most of the world's supply of rubber. The amount of rubber now produced is not much less than formerly; but so much rubber is now being produced on plantations in the East Indies that Brazilian rubber is to-day only about a tenth of the world's supply. Para, a city of 275,000, is the center for its shipment. It will be seen piled up also at Manaos and Iquitos, in fact at almost every stop that is made.

Woods from which dyes are made, woods that are used in making furniture, and cabinet woods, nuts, and barks from which we get vanilla and sarsaparilla are other common articles for export.

The tropical jungle is interesting, if one gets near enough to it to see it well. It must be remembered that this is a wide river, at times so wide that one cannot see across it. Even at Iquitos it is three miles in width. Yet now and then as one comes close to shore the tangle of the forest will be observed. There are many trees and vines of many kinds all struggling for room and so close together that one would often have to cut a path in order to pass through.



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Fig. 188. — Preparing rubber for shipment

The rubber is smoked and dried until it takes the form shown in Fig. 189.

Animal life is just as abundant. The only dangerous beast of prey is the jaguar. Monkeys are common; brilliantly colored birds also, such as parrots; butterflies of gorgeous hues, and numerous other insects. Among the reptiles

are alligators, snakes, and turtles; and there are fish of various kinds. The visitor is sure to see many of these animals. But the many annoying insects, particularly the mosquitoes and fleas, would probably claim more of one's attention.



Fig. 189. — Rubber ready for shipment

© Brown Bros.

The rubber, as you see, is carried on poles. Notice the holes in the large "biscuits" that are lying in the pile.

The hot, damp, and dark forest is the poorest of places for a home; nevertheless the natives who collect the rubber and other forest products must spend a great deal of time there.

The rubber trees are not found in groves, but are widely scattered, one here, another there. The rubber collector, therefore, usually alone, builds a hut for himself out in the forest, which he makes his headquarters. From it he follows paths from tree to tree, covering a considerable area. The rubber from the trees that he taps is brought to this headquarters, smoked and dried, and then carried or taken in canoes to warehouses

erected by white men along the larger streams. From these it is taken by boat to larger centers, finally reaching Iquitos or Manaos or Para, from which places it is shipped abroad. How would you like to spend a few days with the rubber collector? Can you imagine adventures that you might have?

On leaving the Amazon we start for home. There are a few other countries that might be visited; but they would show only such products and kinds of life as we have already seen; and we are tired of the heat and the hardships of travel.

As we leave the continent we are impressed with our dependence upon it. Much of our coffee grows there; part of our rubber, also, and our cacao. Many other things, too, are imported by

us from South America, such, for example, as vanilla, Panama hats, dyewoods, hides, and wool. As these countries develop and our own population increases, much of our other food may be found there, particularly meats and grains. In return, these countries are buying many of our manufactures and are likely to import far more in the future. The welfare of each continent, therefore, depends greatly upon that of the other.

1. How does South America resemble North America? 2. State some advantages that South America enjoys over North America. 3. Show how the climate of South America

Review
questions

has hindered its progress. 4. Tell about the lack of coal. 5. The lack of education. 6. At what seasons should one visit South America and how would one go there? 7. Describe the voyage to Guayaquil. 8. What scenes would you expect in and about Guayaquil? 9. Give facts of interest on a journey to Quito. 10. In and about Quito. 11. At Callao, Lima, and near-by places. 12. At Mollendo, Arequipa, and other points in that region. 13. How is northern Chile especially important? 14. What are the attractions of the central valley of Chile? 15. What route would be taken from Santiago to Buenos Aires? 16. What experiences might be expected on the mountain journey? 17. What does the traveler see east of the Andes? 18. Explain the importance of Buenos Aires and the region about it. 19. What are the attractions of that region? 20. Which is the principal part of Brazil, and what makes it so important? 21. State some facts about the coffee section. 22. Give reasons for the growth of Rio de Janeiro. 23. What obstacle checks its growth and that of Brazil as well? 24. What are some of the conditions to be expected on a voyage up the Amazon River? 25. What is to be seen on such a trip? 26. Describe the life of the rubber collector. 27. How are we dependent on South America?

1. How does the shape of Chile compare with that of a yardstick an inch wide? 2. How can you account for this shape? Is it an advantage or disadvantage for a country to be so long and narrow? 3. The condor of South America

Suggestions
for extra
work

is one of the largest of birds. Read about its appearance and habits. 4. Make a list of the uses of rubber. 5. Make a list of all the things you eat, wear, or use in other ways, which come from South America. 6. There has been talk of a railroad from Buenos Aires to New York. What parts in South America are already completed (Fig. 171)? Map out the route the remaining parts in South America could best take. 7. Make a sand model of South America, showing the highlands and lowlands, the three great rivers, and locations of principal cities. Use Fig. 172 as a help. 8. What reasons can you give why it might be wise for you to study the Spanish language?

1. Between what oceans does South America lie? 2. With what other continent is it connected? 3. Compare South America and North America in shape; in size; in coast line. 4. Measure the distance in miles across South America from north to south; from east to west at the widest part. 5. In what zones does South America lie? 6. Locate and name four important capes or points on the coast line. 7. In what part of South America are the highest mountains? 8. To what mountain system of North America do they correspond? 9. What highland region of South America corresponds in location to the Appalachian Highland of North America? 10. Name and locate the two great river systems of South America. 11. Are there any great bays, gulfs, or lakes in South America? 12. Name and locate the largest country in South America. 13. Locate Chile and describe its shape; also, Ecuador. 14. Judging from the railways and cities shown, which country do you think is the more thickly settled? 15. What are the two largest cities of South America? 16. What country in South America has a climate most nearly like ours? Why? 17. What countries have no seacoast? 18. Using the notes in black type on the margin of the pages as a guide, trace again the imaginary journey described in the text. Locate each place mentioned.

Map ques-
tions on
South
America



EUROPE
RELIEF MAP
Scale of statute miles
0 100 200 300 400 500

PROFILE OF EUROPE FROM LISBON THROUGH THE CASPIAN STEPPE

Fig. 190

PART IV. EUROPE

I. GENERAL FACTS

A continent is a very large body of land almost or entirely surrounded by water. North and South America are continents. Europe (Fig. 192) has oceans on its north and west sides, and on its south two great seas. Name

The boundaries of Europe and reasons for calling it a continent

and locate these bodies of water. On the east, however, there is land. Trace the boundary of Europe from the Caspian Sea to the Arctic Ocean. Europe is thus seen to be only a peninsula extending westward from Asia, a little larger in area than the United States. Europe and Asia together are sometimes called the continent of *Eurasia*.

Yet Europe is commonly called a continent. It got that name long ago, and it is perhaps a suitable name because of its great importance and because its people are in many ways unlike

Reasons for its importance

those of Asia. Europe is very densely populated. Note how many separate countries are shown in Fig. 193. How does the number compare with that in North America? Which country has the greatest area? Which ones have you

often heard of? Locate the British Isles; France; Germany; Russia; Italy. Although Europe is only a little larger than the United States and Alaska, it has about four times as many inhabitants.

Europe is of great importance, also, because it governs so many other parts of



Fig. 191. — Annual rainfall in Europe

the earth. Although Canada governs itself, it is a part of the British Empire. What other parts of North America belong to Great Britain? Guiana, in South America, is divided among three countries of Europe (p. 180). Name and





Fig. 103

locate them. Almost all of Africa is governed by the countries of Europe; so also are large areas of Asia; and one entire continent, Australia, is, like Canada, a part of the British Empire.

Again, Europe has been a teacher for all the peoples of the world. Its countries are so much older than most others that

why there are so many is that the water and mountains together divide the continent into parts that could not easily communicate with one another before the days of railroads, automobiles, the telegraph, and the telephone. For example, the British Isles are entirely

Why it is divided into so many countries



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Fig. 194. — Alps

The part of western Austria called the Tyrol contains some of the most rugged mountains in Europe. They are as beautiful as the Alps of Switzerland. Find these mountains on Fig. 196. Notice that, while the chief mountain ranges of North and South America run north and south, those of Europe run east and west.

for many centuries they led all others in discovering the best ways of farming, mining, manufacturing, and doing other kinds of work. Only in the last century did North America take the lead in such matters. Many of the best books and much of the best music, painting, and sculpture are still produced in Europe and many of the best schools are there.

Make a list of the countries that you find on the map of Europe. One reason

large number of separate countries. Different groups of people have found it difficult to get on with one another, after living apart and keeping their own customs for many centuries. After many terrible wars, they have set up independent governments with any boundaries that they have had strength enough to hold. Much of the boundary of Germany is the result of war. Trace it and note how irregular it is.

cut off from other people by water. Italy is nearly surrounded by water, while on the north side are the lofty Alps (Fig. 193). What other countries are largely cut off by water, or mountains, or both?

In times past when there was little travel, each group of people that was thus separated from others learned to speak a different language from its neighbors and to govern itself in its own way.

War has been another cause of the

II. NORTHWESTERN EUROPE

1. The British Isles

The British Isles, which includes two large islands, Great Britain and Ireland, and many smaller islands, are of special interest to us. All the nations of Europe have sent

settlers to us; but our early settlers who came from these islands gave us our English language. Many of our names of places are English, such for example as New York, New Hampshire, and New Jersey. Can you think of others? Many of our books were written there: for instance, *Alice in Wonderland*, *Robinson Crusoe*, *Treasure Island*, and *Christmas Carol*. Many of our ideas of government have come from these islands, and we have more trade with them than with any other country in the world.

Great Britain is the leader of the British Empire, which includes about a fourth of all the land, and nearly a fourth of all the inhabitants of the earth. We have already noted (p. 198) that Canada and Australia are parts of this empire; so, also, are Ireland, the great peninsula in Asia called India, and large portions of Africa and scores of islands in all parts of the world. Many of the colonies look to England for guidance in government, commerce, and

education. No other country has so many people dependent upon it.

Since we are so closely related to these islands many of us visit them both for



Photo by P. A. Knowlton

Fig. 195. — Banbury Cross, Banbury, England

Do you remember the rhyme about Banbury Cross?

business and for pleasure. If you were to make the voyage from New York, you might be surprised at the direction the ship took. Instead of sailing directly east, it would go northeast nearly all the time. London is almost seven hundred miles farther north than New York City, or as far north as southern Labrador. First on a globe and

A visit to these islands

1. Some facts about the voyage



Fig. 196



Fig. 196



Fig. 197. — Glasgow, Scotland

© Photo from Ewing Galloway

The River Clyde has had an important part in making Glasgow a great manufacturing center. Explain how rivers or canals are an aid to a city engaged in manufacturing.

then on Fig. 315, follow the course that a ship would take. Note how near you would pass to Nova Scotia and Newfoundland.

The voyage would last from five to ten days, according to the speed of the vessel. The port for which you would be bound would probably be Southampton on the southern coast of England (Fig. 196), or Liverpool on the western coast. Estimate the distance from New York to Southampton; also the rate of travel if the voyage takes a full week. How does this rate compare with the usual rate by rail?

The climate on the islands might bring another surprise. Although they lie so far north, the temperature is warmer in winter and cooler in summer than in New York State. Less fuel is needed in winter, and

people suffer little from the heat in summer. Heavy wraps and light summer clothes are less needed there than here.

The Atlantic Ocean and the winds furnish the explanation. The warm waters of the Gulf of Mexico drift northeastward past Ireland and far toward the Arctic Ocean; the winds which blow from the



Fig. 198. — The Thames River at Hampton, England

© Press Illustrating Service

This small city lies to the west of London, in the farming section of England. This southern portion of the country is quiet, clean and pleasant, a section that one would enjoy visiting on a tour of the British Isles.

2. The clothing needed on the island

west spread their warmth over the land and give it a much milder winter than could otherwise be expected. In summer the ocean is cooler than the land and the winds bring cool air to the islands.

These westerly winds carry an abundance of moisture. Some of the western slopes of the mountains receive as high as eighty inches of rain in a year, which is twice as much as falls in most of our eastern states. Farther east the fall is less and in southeastern England the amount is not over twenty-five inches.

London is the city to visit above all others in the

British Isles. It is the capital and the center of the British

a. In London

Empire and the largest city in the Old World.

Possibly the most interesting thing to see there would be the harbor. The city is located on the Thames River about forty miles from its mouth. This is about as far up-stream as ocean vessels can go. For thirty-five miles of that distance, ships from all parts of the earth would be found on both its shores loading and unloading their goods. London is the port into which much of the food for this island is brought. If you were to board the vessels or pass through the warehouses, you would see vast stores of bananas, coconuts or coconut meat, cocoa, coffee, tea,

wines, wheat, flour, corn, rice, sugar, and meat. Make a list of other things you would expect to find. What flags of foreign nations could you recognize?

The street scenes might interest some persons even more. The buildings are by no means so tall as they are in our large cities, nor are street cars common. The



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Fig. 199. — In the business center of London

Many of the important streets of that city are the built-up portions of very old roads that reach out from the center of London in every direction. Notice the lack of tall office buildings.

streets are too narrow for them, and omnibuses are used instead (Fig. 199); they can pick their way about more readily. Would you expect to find many foreigners on the streets? Why?

Some of the public buildings should be visited. Since London is the capital of the British Empire, many laws are

have a great foreign commerce. How far apart are Liverpool and Manchester?

These three cities are well situated for ^{b. In Liverpool and Glasgow}



Fig. 200. — Westminster Abbey, London

This is one of the most famous buildings in the world. Here are buried many of England's greatest men.

made there and the Parliament Buildings in which this is done would be of interest. The British Parliament corresponds to our Congress that meets at Washington (p. 31). Westminster Abbey (Fig. 200) is a church that is noted as the burial place of poets and statesmen. The palace of the king would be seen from a distance. One of the most famous buildings in the city is the historic prison called the Tower of London.

Liverpool ranks next to London as a seaport. Manchester and Glasgow also

trade with North and South America. They receive vast quantities of food and raw materials for manufacture, and they send away manufactured articles. In their harbors the great number of masts reminds one of a forest and the funnels of steamships can be counted almost by the hundred. Many of the ships are unloading wheat, flour, corn, meat, and wool. Cotton bales by the thousands may be seen at Liverpool, although most of them are carried farther inland by ship canal to Manchester (Fig. 196). What countries that you have studied are likely to send these things to Great Britain?

The cities of northern England and southern Scotland would seem to you dingy and smoky, for they have an enormous number of factories and mills. Shipbuilding is a leading industry; Glasgow is the greatest center in the world for this work. So many ships are built there that even the chance visitor is likely to see the launching of one. The principal articles piled up at the wharves ready for export are woolen, cotton, and linen goods and machinery of all kinds.

Edinburgh, facing the North Sea and only a short distance east of Glasgow, is

very different in appearance. It was the capital of Scotland when Scotland was a separate country. Here one sees churches and schools, bookstores, government buildings, and beautiful parks (Fig. 200). There is less smoke and everything is cleaner.

A visitor on the eastern coast of England would find many fishermen in every coast town (Fig. 202). The shallow water of the North Sea is chilly but not very cold—just right for large numbers of herring and other kinds of fish. Since the winters are mild, fishing can be carried on here the year round. Accordingly, fishermen swarm there from all the countries around the North Sea. A passenger on board a ship crossing the North Sea to Hamburg in Germany once counted 120 fishing boats within a few minutes, although the day was so rainy that he could not see far. There are about 100,000 fishermen in the British Isles. A large part of them fish in North Sea waters. What are some of the dangers they must meet in stormy and foggy weather?

Any traveler crossing northern England is struck with the number of chimneys belching forth black smoke. Great Britain is a manu-

facturing is iron ore; and that also is found in large quantities near the coal. The visitor, therefore, would see many miners and mining towns. Nearly a million men are at work here underground. How could you tell that they were miners, if you saw them on their way to or from their work?

There are three principal kinds of manufacturing in the cities. One makes use of the coal and iron ore to produce iron and steel and hundreds of kinds of metal articles. Birmingham and Sheffield are especially noted for that work. Locate these two cities. Here steel armor plates for battleships, steel rails, firearms,

e. In the manufacturing districts.



Photo by Elmendorf © Ewing Galloway

Fig. 201.—Scott Monument and Princes' Street, Edinburgh

Read the text to see why you would expect Edinburgh to be a more beautiful city than Glasgow.

automobiles, and other products are made. Does the chief occupation of Birmingham, in England, explain the name of Birmingham in Alabama?

c. In Edinburgh and other towns on the east coast

d. In the mining districts

Another kind of manufacturing here is that of woolen goods. Sheep have always thrived on this island; this led long ago to the spinning and weaving of wool. Now the native sheep supply only a small part of the wool used. The leading cities in this industry are Leeds and Bradford. Find them in Fig. 196. What

of coal supplies cheap power for running the machinery. Now the cotton industry is much more important than woolen manufacture. The cotton comes from our Southern States, from Egypt, and from warm parts of the British Empire such as India and east central Africa. The center of the industry is Manchester,



Fig. 202. — An English fishing fleet

articles can you name that are made of wool?

The third kind of manufacturing here is that of cotton goods. Strange to say, while these islands grow no cotton, an enormous amount of it is here made into thread and cloth. See how long a list you can make of things made of cotton. Where one kind of cloth is made, the workers can easily learn to make another. The spinning and weaving of wool led to cotton manufacture. The abundance

which is connected with Liverpool by the ship canal already mentioned as well as by railroad. What is meant by a *ship canal*?

Central England and southern Scotland are two of the greatest workshops of the world. In these regions the cities are so close together that a person sometimes cannot tell when he is leaving one and entering another. People in the West Indies, southern Africa, India, and many other far distant places suffer if

there are hard times here. Why? Do you see now why so much food and raw material are brought into the leading sea-ports, and so many goods made of iron and steel, wool, and cotton are sent forth? Name the principal imports and exports once more. Why would there be suffering in many parts of the world if the coal miners of England, Scotland, and Wales refused to work?

cover many of the buildings, and green grass and magnificent trees are always in view (Fig. 204).

Some of our most important crops would not be seen: for example, corn, grapes, sugar cane, or cotton; *b. The farm products* the summers are too cool for them. But the most hardy grains and vegetables flourish, such as oats, barley, rye, cabbages, peas, beans, turnips, and



Photo by Elmendorf © Ewing Galloway

Fig. 203. — Loch Arve in the Scottish Highlands

To many visitors the country districts would be the most attractive parts of the island. There is a beautiful lake district in northern England, and another in Scotland. *a. The scenery* How could you enjoy yourself in such a place? Almost any section of the country, however, is beautiful. The houses and the fields are kept in good condition, the winding roads are finely paved, the hedges that border them are well trimmed, ivy and other vines

potatoes. Truck gardens are very numerous, since there are so many large cities.

Twice as much space is given to grass as to all these products, partly because much of the land is too hilly and rocky to be cultivated, and partly because grass grows so well in that climate. Some of the finest country scenes are those of grazing cattle and sheep. Many of our best cattle and sheep are imported from Great Britain and its neighboring islands. Possibly you know the names of some of



Photo by P. A. Knowlton

Fig. 204. — A country village in southern England

All the buildings in the picture are more than 700 years old. Everywhere here you would see stone walls, hedges, and thatched roofs.

the breeds. The cattle and sheep supply many useful products, such as milk, butter, meat, hides, and wool. Yet farming, when compared with other occupations, is much less important in the British Isles than in any other leading country, and far too little food is produced to feed the people.

Some travelers going from America to the British Isles

leave the vessel at Queenstown, or Cobh, in Ireland.

From there they go to Cork, then to Dublin, capital of the Irish Free State, and thence to Liverpool or Glasgow. Trace the route. This country is charming because the frequent rains keep all growing plants

especially green. Ireland is often called the Emerald Isle because of this rich color.

Lakes are numerous there also, the Killarney Lakes (Fig. 206) being perhaps the best known. Farming, rather than manufacturing, is the chief occupation. Many of the farm products are similar to those of England. One of the principal differences is in the great amount of flax grown in Ireland. Flax, you know, is the material from which linen is made. Belfast in particular is noted for its linen mills. Both Dublin and

Belfast are so close to Great Britain that they can easily secure coal and iron. Many of their manufactures are similar



Photo by Elmendorf © Ewing Galloway

Fig. 205. — The River Lee at Cork

to those in Liverpool and Glasgow.

1. Why have we a special interest in the British Isles?

Review questions

2. Describe the voyage from

New York to Great Britain.

3. Name and locate three ports at which passengers

often land. 4. What kind of clothing would one need

on these islands? 5. Tell about some of the interest-

ing sights in London. 6. In Liverpool and Glasgow. 7.

In Edinburgh and towns along the eastern coast. 8.

State some facts about mining in Great Britain. 9. What three

kinds of manufacturing are especially important in the interior cities? 10. Name

and locate two cities noted for manufac-



© Publishers' Photo Service

Fig. 206. — A portion of one of the Lakes of Killarney

These famous lakes lie in basins between low mountains in western Ireland. The whole region is one of great beauty. There are many ruins of castles, some of which were built before America was discovered. The moist climate favors the growth of plants and most of the mountains are covered with forest from base to summit.

ture of steel goods. 11. Two noted for woolen manufacture. 12. One noted for cotton manufacture. 13. Name the principal farm products. 14. What are some of the attractions of Ireland?

1. Make a list of good books whose authors lived in the British Isles. 2. People from England

Suggestions for extra work

are called English; what are those from Ireland called? From Scotland? From Wales? 3. What waters separate Great Britain from the continent of Europe? What is the shortest distance across? It is said that Britain has escaped many wars by this separation. How can that be true? 4. Describe the launching of a ship.



Photo by Elmendorf © Ewing Galloway

Fig. 207. — A farm scene in western Ireland

What indications do you see that this country is well watered?



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Fig. 208. — An airplane view of a part of Paris

Note the irregular streets and the trees along the famous boulevards. What is the stream that flows through the center of the picture?

2. France

More than two million of our men went to France as soldiers in 1917 and 1918. A few sailed directly to Havre (Fig. 196), the port of Paris at the mouth of the Seine River. There they took train for Paris, since the river is too shallow for large ocean vessels; or they went directly to their training camps. Others landed at Cherbourg or Brest, or even as far south as Bordeaux, wherever there was room in the crowded harbors or wherever the course seemed safest from the enemy's submarines. Some went to England and then crossed over to Calais or Boulogne. Trace the route from New York, and locate these French ports.

Our soldiers
in France

1. How they
reached the
fighting line

New York, London, and Berlin are the only cities in the world that are larger than Paris, but Paris is unlike any of them. Its principal streets are broader; the best known is the avenue called Champs Elysées (Fig. 209). The buildings are of about the same height, unlike those in New York as shown in Fig. 67; and the Seine River, which runs through the city, is crossed by many beautiful bridges. The street life, also, is more interesting, partly because there is more of it. For example, many of the restaurants serve their customers out of doors in the summer; the wide sidewalks in front are filled with tables and chairs.

2. What they
saw in and
about Paris

There are many fine churches. Two of the most noted are the Madeleine, built like an ancient Greek temple, and Notre Dame. The mansion of the president of the republic, corresponding to our White House at Washington, may be seen there; and there are several huge buildings, once palaces, that are now used as museums or art galleries, in which some of the finest paintings and statues in the world are exhibited. One of these is called the Louvre. Near Paris, at Versailles, is the world's most magnificent palace; here was signed the treaty of peace that ended the World War (Fig. 210).

Our soldiers could not have been greatly surprised at the climate, for it is similar to our own. On the western coast it is mild and damp like that of our own western coast, owing to the westerly winds from across the Atlantic. The farther inland one goes, the warmer it gets in summer and the colder in winter. In the section where most of our troops were quartered, both seasons are much like those in southern New York, though perhaps a little milder. The products, also, are similar to our own: cattle and sheep; wheat, corn, oats, rye, and vegetables; fruits such as we know, and an especially large quantity of grapes (Fig. 211). Southeastern France, however, partly because of winds that blow from over the Mediterranean Sea, is semi-tropical, like southern California and Florida. Along the Mediterranean coast in the section called the *Riviera*, oranges, lemons, olives, and figs are found in abundance.

There are two striking differences between France and the United States in

the farming. One concerns the size of the farms. Some of the French farms contain no more than two and one half acres; and nearly one fifth of the land is in farms of less than twenty-five acres. What is the usual size in your state? The other difference concerns the place where the farmers live. They do not have their houses on their land, but have their homes in small villages and go out into the fields to work. What advantages and disadvantages do you see in such a plan?

2. Important differences

How French farming compares with our own

1. The climate and products



Photo by Elmendorf © Ewing Galloway

Fig. 209. — The Champs Élysées, Paris

The area of France is a little over 200,000 square miles and its population is about 40,000,000. Compare these figures with the corresponding figures for The British Isles (Appendix). The part of the total area of France that is level enough for cultivation is larger than it is in The British Isles. Locate the prin-

cial plains and highlands (Fig. 196).

More than one half of all French workers

Why the French are more independent than the British in their food supply

are farmers, while in the British Isles the farmers are less than one fourth of the population. Four out of five of the French farmers own the land they cultivate. What effect

must these facts have upon the amount of farm products that they raise?

the manufacture of cotton, woolen, and linen goods.

The making of silk goods is a fourth textile industry of importance, particularly in the Rhone Valley. The raw material for silk is obtained from cocoons spun by a caterpillar called the *silkworm*. Each of the cocoons is made of a tiny silk thread several hundred yards long, looking somewhat like the thread of a



Fig. 210. — The Hall of Mirrors in the palace at Versailles

© Publishers' Photo Service

It was in this beautiful room that the treaty of peace closing the World War was signed.

Northern France resembles northern England in its mining and manufacturing.

Mining and manufacturing compared with those industries in England

A large part of the coal and iron mined in France comes from its northern part; and the same three textile industries are found there that

are prominent in the British Isles, namely,

spider's web. The silk industry depends upon these worms, which require much care. Their principal food is the leaf of the *mulberry* tree, which is cultivated in large groves in the Rhone Valley; but the greater part of the raw silk is imported from other countries, especially Italy, Japan, and China. The leaves are plucked

from the trees and fed to the worms; and when the caterpillars reach the right age they spin the cocoons. After these have been softened in hot water, the threads are unwound, and then wound upon spools. They are later made into silk thread, which is then woven into ribbons, cloth, and other silk goods. The center of

Saar Basin (Fig. 196), which have greatly increased its coal supply.

The cities in Great Britain that rank next in size to London are on the west coast, where they can best trade with America. One might expect, therefore, that the French cities ranking next to Paris

The two cities next to Paris in importance



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Fig. 211. — Vineyards in France

One of the great industries of France is wine making. The land in the grape-growing regions is so valuable that nearly every square foot is used. The vines are kept short. Pruned vines grow better grapes and the vineyards are thus more easily handled.

the industry is Lyon (Fig. 196), the leading silk-manufacturing city in Europe.

Before the World War, however, France was seriously hindered in manufacturing by lack of coal. It mined only a small fraction of the amount mined in England, and partly on that account its manufacturing was much less. But as a result of the war France has been given the use of many large coal mines in the



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Fig. 212. — Household spinning in Brittany

The northwestern part of France is called Brittany. There are many very old-fashioned homes in France. This one room serves as a living room, kitchen, and bedroom. Do you see the bed? The open fire is used for cooking and heating.

would be on the west coast. Yet they are not; they are Marseille and Lyon, one on the Mediterranean coast and the other in the Rhone Valley (Fig. 196).

1. Advantages of their location

France imports much smaller quantities of food and raw materials for manufacture from the New World than does England, and exports smaller quantities of manufactured goods; therefore its

seaports on the Atlantic are much smaller. On the other hand, it has a large trade with the Mediterranean countries and the Far East by way of the Rhone Valley, which has always been the main route

it, in Africa, are Algeria, Tunisia, and Morocco, important colonies of France. Their trade with the mother country naturally passes through this port. What route would goods bound for London

from points on the Mediterranean coast be likely to take if they did not go up the Rhone Valley?



Fig. 213. — A village in a farming district of France

Photo by P. A. Knowlton

On this sunny afternoon all the men were away, working in the wheat fields and vineyards near the village. Most French houses are built of stone or of brick.

between those regions and northwestern Europe. In Fig. 196, trace the course that goods might take up the Rhone River to Paris. Notice how the rivers of France are connected by canals. Can Paris be reached from Marseille by water? This trade route has greatly helped the growth of Lyon and Marseille.

Lyon is not only a center for silk; it has extensive metal manufactures as well.

It is not far from coal and iron mines, and makes more automobiles than any other French city.

Marseille is the leading seaport of France. Across the Mediterranean from

mining and manufacturing in France with these occupations in Great Britain. 8. Tell about the silk industry of France. 9. Why are the cities on the west coast of France less important than those on the west coast of Great Britain? 10. Show the advantage of the location of Lyon and Marseille. 11. State some facts about their industries and commerce.

1. How much of the boundary of France is natural? 2. About how far is Paris from the Belgian boundary? The Spanish boundary?

3. Find or mark off a plot of ground that contains only two or three acres. 4. Make a collection of photo-

1. Name and locate the principal ports of France.
2. How is Paris different from New York and London?
3. Name some of the noted buildings and other attractions of Paris.
4. Compare the climate and farm products of France with those of the United States.
5. State two differences between them.
6. What makes the French more independent than the British in regard to food supply?
7. Compare

Review
questions

Suggestions
for extra
work

2. Their industries and commerce

graphs taken in and about Paris. 5. Soften a cocoon in warm water and see if you can unwind the thread. 6. Show that when a hole is broken into a cocoon, its value for silk is destroyed. 7. Draw an outline of France and put in the prin-

cipal highlands, rivers, and cities. 8. How far is it from Paris to London? How far from Paris to Berlin? 9. Find out how large a part of the area of France was fought over and left in ruins at the end of the World War.

3. Germany

The countries of Europe are so important that we often forget how small they are. Germany, for example, has only two thirds the area of Texas. In population, however, there is a vast difference, for

How Germany compares with Texas in area, population, and size of cities

Germany has about thirteen times as many inhabitants, or more than 62,000,000. How much more is that than one half of the entire population of the United States? How many people would Texas have if it were as densely settled as Germany?

As might be expected, Germany contains many large cities. In 1920, there were only four cities in Texas with a population of more than 100,000, and no city in Texas had a population of 200,000. In Germany, however, there are more than a score of such cities. The largest German city is Berlin, the capital, with nearly 4,000,000. Others are Hamburg, Cologne, Leipzig, Dresden, Breslau, and Munich. Locate these cities on Fig. 196.

How can so small a country support so many people? How can it feed them? This question is especially serious when one understands how unfavorable some of the

How so many people get enough to eat



Photo by Elmendorf © Ewing Galloway

Fig. 214. — The Brandenburg Gate in Berlin

On one side is Berlin's widest and most famous street; on the other, its largest and most beautiful park.

conditions are for profitable farming.

The rainfall is sufficient in all parts. It is heaviest in the west and becomes less toward the east until it is only about twenty-five inches; for the rain-bearing winds come from over the Atlantic. Yet



Photo by Elmendorf © Ewing Galloway

Fig. 215. — Natives of Bavaria

Bavaria is the name of one of the highland regions of south Germany.

there is enough rain everywhere for the usual crops of the temperate zones. The temperature also is not unfavorable; for the summers are nearly as warm as those in our Northeastern States.

But there are two difficulties. In Fig. 196 you can see that almost half the area is mountainous or hilly. In the extreme south many of the mountains reach an altitude of more than a mile, but they are not so high farther north. A large part of this mountainous area is too rough for farming and is covered with forest.

The northern part is a great plain, level enough for farming; but much of it is too sandy to be farmed profitably. Partly for that reason there are extensive forests there also; and much of the land used for farms is not very fertile.

In spite of these drawbacks, Germany is a noted farming country. The people are careful to cultivate as much of the

land as possible, and they fertilize the soil far more extensively than we do. Their most important products are rye, oats, wheat, barley, potatoes and other vegetables, sugar beets, and grapes. Rye holds the place there that wheat does in our country; and most of the people eat rye bread, often called *black bread*. Many prefer it to wheat bread. Germany leads the world in the production of sugar beets, and is noted for its vineyards.

Only about one third of the people, however, are occupied with farming. As in the case of the English (p. 208), large amounts of



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Fig. 216. — Picking onion seed in Germany

food must be imported. We send the Germans dried fruits, wheat, corn, meat, and a large quantity of lard. They are able to pay for such imports by other goods that they produce.

Germany is one of the leading manufacturing countries of the world. One

reason for this is that the farms can support so few of the people; the others must do something else to make a living. But there are many conditions which favor manufacturing. For example, coal is abundant; before the war, Great Britain was the only

country of Europe that produced more coal than Germany; and no other European country mined so much iron ore. If you remember the importance of coal and iron ore in the industries of our Northeastern States (p. 77), you can realize their importance for Germany. In Fig. 196 you see the names of several cities just north of Cologne and east of the Rhine River. How many can you count there close together? They are engaged chiefly in iron and steel manufacture; for that section is one of the great centers in the world for this industry. With what two sections in the United States can you compare it (pp. 78 and 115)? With what part of Great Britain (p. 205)?

Germany closely resembles our Northeastern States in its manufacturing. You have seen how Pennsylvania and the surrounding states produce iron and steel and heavy articles made from them. You have seen, also, how New England, being farther away from the coal and iron supply, makes lighter articles of metal

(p. 78). Germany manufactures both the heavy and the light articles in large quantities; for example, engines, boilers, steel beams and armor plates for ships, and hardware. It is widely known for its excellent knives, scissors, needles, and microscopes. It imports large amounts



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Fig. 217. — Painting dolls' heads and arms in a German toy factory

In some portions of Germany great quantities of toys and Christmas goods are made. These women are painting dolls' heads and arms. In the basket are hundreds of arms. Many German toys are sold in the United States.

of copper from us to be used in connection with metal manufactures.

Again, like New England, Germany has a large and important textile industry, including the manufacture of cotton, woolen, and silk goods. Nearly all of its raw cot-

2. Other leading kinds of manufacturing



Fig. 218. — Bremen

Why may this be considered one of the North Sea ports (Fig. 196)?

ton is obtained from us, and it exports lace and other textiles to us. In addition to all these things, it produces about four times as much beet sugar as we do and makes a great quantity of beer and wine.

Other conditions, also, have been favorable to Germany. For example, its central position

3. Facts which favor transportation

puts it in closer touch with the leading nations of Europe than any other country. What nations border it (Fig. 196)?

At the same time it has a direct outlet to the sea. Its two leading ports are Hamburg and Bremen (Fig. 218). Locate them. Note the number of ports on the Baltic Sea also. They are

more likely to be blocked by ice in winter than the others. Can you suggest why? Trace the route from these ports around Denmark to the North Sea. Locate the Kiel Canal across the southern part of this peninsula. About how much distance does it save?

The rivers are another important aid to German commerce, since they are navigable for a good part of their length. In what direction do most of them flow? What are the names of the larger ones flowing

north? The Rhine (Fig. 219) is the most important, although neither its source nor



Photo by Elmendorf © Ewing Galloway

Fig. 219. — Scenery along the Rhine

Along the Rhine, chiefly on the hilltops but now and then close to the water, are the ruins of castles hundreds of years old.

its mouth is in Germany. In what countries are they? Why might the Germans regret that the mouth is not in German territory? What reasons can you see for the importance of the Rhine? Recall what was said about manufacturing along its course; also, note the number of cities upon it, and the location of its mouth.

The Danube River flows across southern Germany and eastward into the Black Sea. Trace its course in Fig. 192. It is connected by canal with the Main River, which flows into the Rhine. Thus boats can travel all the way from the North Sea to the Black Sea. What advantage for Germany do you see in this fact?

1. Compare Germany with Texas in area; in population; in number of large cities. 2. How are the conditions in Germany unfavorable to farming? 3. Name the principal farm products. What food does Germany buy

Review questions

Why Switzerland is the favorite country in Europe for tourists

The mountains, rising in the path of the west winds, cause a heavy rainfall, much of which falls in the form of snow. The many snow-covered peaks, being so white and high, look like distant clouds. The great quantities of snow have formed glaciers, which move slowly down the valleys like rivers of ice. Below the snow

of us? 4. What important minerals are found in Germany? 5. How does it resemble our Northeastern States in manufacturing? 6. What advantages for commerce does Germany's position give it? 7. What advantages do its rivers give it?

1. Germans on the average eat about half as much sugar as we do. What explanation can you find for this fact? 2. Follow the course that goods might take from

Suggestions for extra work

New York across Germany by water to the Black Sea. 3. Draw an outline map of Germany, showing the boundaries, the principal rivers and cities, and the countries bordering it. 4. Between what two routes must ships choose, in order to reach the ocean from Hamburg? Which is probably the more used? Why? In either case, how near to Great Britain must the ships approach? Do you see any reason why the Germans might regard this as a disadvantage?

4. Switzerland

Switzerland, in the center of Europe, is often called the playground of that continent and America because so many tourists go there to enjoy the scenery and climate. In the lofty Alps is some of the grandest scenery in the world.

line the ice melts, and streams and lakes are numerous. The lower slopes are fertile, and in spring and summer the grass-covered valleys are brilliant with flowers.

The high altitude gives Switzerland a cool climate, and tourists enjoy especially the outdoor life. The dry, bracing air is also helpful, so that many go there to regain their health. One of the chief pleasures is mountain-climbing, which is sometimes dangerous as well as exciting. Many persons spend their winter vacations there in order to take part in such sports as skating, skiing (Fig. 222), and tobogganing.

Only the most sturdy people can climb the higher mountains, for it is a difficult and dangerous task. Mont Blanc, the highest peak in the Alps, is often chosen for this sport. What is its height (Fig. 196)? Though its summit is just across the

The ascent
of Mont
Blanc



Photo by Publishers' Photo Service

Fig. 220. — A bit of Swiss scenery

Beautiful waterfalls, cliffs with varied colored rocks, deep gorges, glaciers, and forests are the attractions of Switzerland to many tourists.

border in France, its lower slopes are in Switzerland and the climb is started in that country. Strangers wishing to climb it dare not go alone; they must employ guides to show them the way and help them over the worst places.

The round trip usually takes two nights and three days; and as there is no place to obtain food, it is necessary to carry it.

Overcoats and blankets are also needed; for even if the journey is made in the hottest summer weather, it may be bitterly cold upon the mountain top.

Suppose that we are making such a journey. We start early in the morning, so as to have a long day. Each of us carries a few light articles, but the guides and porters take most, for they are strong and used to climbing. At first we walk along a pleasant path in a beautiful wood; now and then a house is passed, and perhaps a green field, but soon there are no more houses or tilled fields, and we meet no people. The trees become smaller and smaller, until the line is reached above which it is so cold that no trees can grow. This is called the *tree line* or *timber line*.

From this point on, no plants larger than bushes are seen, and after a while even these disappear. Meanwhile the soil and grass have become more scarce, while here and there banks of snow are found in the shady hollows. Soon we have climbed to the *snow line*. This is the line above which snow is found all the year round. Now, no matter in what direction we look, rocks and snow are everywhere to be seen, and the snow is often twenty or more feet in depth (Fig. 221).

What a wonderful view is before us! It repays us for all the hard work. We look down upon the woods through which we have just passed, and over them to the deep valleys, with the green fields, pretty houses, and villages far below us. Beyond are seen other steep mountains on the opposite side of the valley.

A guide takes his place in front of us, and often tells us to stop while he goes

ahead to examine the way. It may be that the snow has bridged over and hidden a deep and narrow chasm, and if we were to step upon this snow bridge, we might break through and fall a hundred feet or more. Sometimes the guides lift us over a dangerous place; and when it is steep or slippery, they fasten all the members of the party together with ropes, so that if one starts to fall, the others may hold him.

As we advance higher and higher, it is often necessary to take a narrow path on the steep side of the mountain. On the right we can look hundreds of feet almost straight downward; on the left are huge stones and masses of snow almost directly overhead.

The snow sometimes slips, forming *snowslides*, or *avalanches*, which are very dangerous. They come tearing down the sides of the mountains with a terrible roar, at times burying whole villages beneath them. You have seen the same thing, on a much smaller scale, when snow has slid from the roofs of houses on warm winter days.

After one night spent in a little house about halfway up the mountain side, and after much hard work on the next day, we reach the summit. Here, in spite of our heavy wraps, we are all

shivering, for it is freezing cold upon high mountain tops and there are often fierce winds which seem to go through even the thickest clothing.



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Fig. 221. — The ascent of Mont Blanc

The party of mountain climbers is resting at a point known as the Grand Plateau, 13,000 feet above the sea. Beyond is seen the snowy summit. The climbers are equipped with ice axes, packs, and snow glasses.

On this barren mountain top there are no birds, no trees, no grass — nothing but snow and rock. But if it is a clear day and there are no clouds clinging to the



© Ewing Galloway

Fig. 222. — A skiing party mountain-climbing in Switzerland

of machinery and instruments.

Among the many beautiful Swiss towns Lucerne, near the center of the country and beside a lake of the same name (Fig. 224), is one of those most often visited. Near by are two famous mountains, Rigi and Pilatus. From their summits one obtains magnificent views of the lake, over 4,000 feet below, bordered by green meadows and numerous villages. In several directions,

mountain sides below us, we may be able to look down into the beautiful green valleys only a few miles away. There the birds are singing, flowers are blooming, and men working in the fields are complaining of the heat.

More than 3,000,000 persons visit Switzerland each year. Probably on the average each spends not less than \$50 on hotel bills, railroad fares, and amusements while in the country. You can estimate, therefore, the amount of money their visits bring to the hotel keepers, guides, and merchants of Switzerland.

It is known that considerably over one third of this sum is spent on hotel bills alone. No wonder that the accommodation of tourists ranks as a great industry there! There are over 9,000 Swiss hotels, many of them in the mountains where the scenery is the grandest. The number of people employed in hotels is second only to the number employed in the largest Swiss industry, the manufacture

as far as the eye can reach, are the snow-covered crests of lofty mountains shining in the sunlight or lost in the clouds.



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Fig. 223. — A Swiss hamlet

Directly back of this little village you see a glacier.

Another beautiful city is Geneva, on a large lake of that name in the midst

Chief industries in the cities

of the Alps. It is especially noted for its fine watches.

In northern Switzerland are Zurich, the largest city, on Lake Zurich, and Basel, at the point where the Rhine enters Germany. All three

of these cities have good water or railroad connections, and are manufacturing centers, where textiles, jewelry, scientific instruments, and dairy products are made. Perhaps you have seen a Swiss watch or carved cuckoo clock. The next time you buy milk chocolate see whether it bears a Swiss brand.

The best farm lands of Switzerland are on the plateau lying between the Jura

Leading kinds of farming

Mountains on the north

and the Alps on the south. In the valleys of that region grains, vegetables, and fruits are raised. On the mountain slopes are many fine pastures, and dairying is far more important than other kinds of farming. In the early spring the cattle, sheep, and goats are driven up the slopes of the valleys as the snow and ice melt and new grazing lands are exposed. Such a pasture is called an *alp*, and from it the chief mountains have received their name. The herders remain far up in the mountains all summer, living in log huts, watching the flocks, and making cheese from the milk. In the fall the herds are driven back to the valleys to be stall-fed during the winter. What pleasures and

hardships do you see in the life of a herder in this mountainous country?

1. Why is Switzerland the favorite country of Europe for tourists?

2. Show the importance of the tourist industry there. 3. Give an ac-

Review questions



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Fig. 224. — Lake of Lucerne

count of the ascent of Mont Blanc. 4. How is the region about Lucerne especially attractive? 5. Name the principal cities and their leading industries. 6. What are the leading kinds of farming?

1. What effect did the World War have upon the tourist trade of Switzerland?

Why? 2. Compare Switzerland with your own state in area and population. 3. Read the story of William Tell. 4. The Swiss people living next to France speak French; those next to Germany speak German; and those next to Italy, Italian. What disadvantages do you see in having three languages in one small country? 5. What large rivers rise in Switzerland?

Suggestions for extra work

5. Belgium and The Netherlands

These two countries have far more importance than their size suggests. They are the principal gateway to and from the interior of Europe. East and southeast of them are many nations that want goods from England and across the Atlantic, and that send goods to both of those regions.

Importance of
the location of
these coun-
tries

Netherlands, and Antwerp in Belgium. Which one of these three cities is on the Rhine River? By means of canals, boats from the other two cities can easily reach the Rhine. About how far is each of these three ports from London? Locate also The Hague and Brussels, the capitals of these two countries. The area of Pennsylvania is less than the average area of our forty-eight states, yet The Netherlands and Belgium are each only about one quarter as large as the state of Pennsylvania. On the other hand, the population of each is nearly equal to that of Pennsylvania. This shows that the people are very much crowded, even more so than those of Germany.

These two countries form a striking contrast to Pennsylvania in their surface features.

How they
compare with
Pennsylvania
in appearance
and products

1. The contrast
in appearance

What do you remember about the mountains in Pennsylvania (Fig. 66) and the difficulty early settlers had in crossing them (p. 73)? The surface of these two countries is remarkably level; only the southeastern part of Belgium has any elevated land. The highest point even there is only about 1,100 feet above sea level.

Moreover, a portion of the land of The Netherlands is even lower than the level of the sea. On that account this country is often called Holland, or *hollow land*. What is the meaning of Nether-lands?



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Fig. 225. — The water front at Rotterdam

The Rhine River is a natural highway for the transportation of such goods; its connection with the Danube, as we have seen (p. 219), provides a water route all the way to the Black Sea. There is no such easy route across France toward the east; and the route by way of Bremen or Hamburg is less direct. Estimate the distance from the coast of Belgium to Hamburg. In addition, the coasts of The Netherlands and Belgium have many excellent harbors.

The above facts explain why these small countries have three great ports: Amsterdam and Rotterdam in The

Fig. 196 shows how large a part is below sea level.

Many of the farm products of The Netherlands are the same as those of Pennsylvania. The principal crops are wheat, oats, and rye, vegetables and sugar beets, flowers raised for seed, and grass. Dairying is a very prominent industry. The people, called the Dutch, send away great quantities of butter, and Dutch cheese is famous throughout the world.

The appearance of the farms, however, and many of the methods of work would seem very strange to us. In the region below sea level the land must be protected from



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Fig. 226. — A school in Holland

These boys are learning the silversmith's trade.



Photo by Elmendorf © Ewing Galloway

Fig. 227. — A knitting lesson in Holland

floods by high embankments. The lower Rhine is kept within its banks in the same way as the lower Mississippi River (p. 116); and as one approaches Rotterdam on shipboard, or travels by boat through the lowlands, one sees the house-tops on a level with these embankments, and looks downward into the surrounding fields. The storks that may be seen resting on the roofs are protected by law, because they eat crayfish and other burrowing animals that might cause leaks in the embankments, or *dikes*.

On such a trip one finds the houses spotlessly clean. The people usually leave their wooden shoes at the door, so that they may not soil the floor with mud. Even the gardens of fruit and flowers are in exact rows and without a weed. Rain on more than 200 days in every year, together with the seepage of water through the dikes, keeps the low ground wet, and the water must, therefore, be pumped out.



Photo by Elmendorf © Ewing Galloway

Fig. 228. — A home in Holland

The Dutch people are noted for their cleanliness. No matter how humble the home, it is kept neat and free from dirt. Notice the cleanliness of the street before these modest homes.

Windmills are commonly used for this purpose, and are found near most houses; but gasoline engines and electric motors are being used more and more in place of windmills. Since about one half of all the farmland in The Netherlands is in grass, what animals would you expect to see in large numbers?

Belgium is the most densely populated country in Europe, and the people are, if possible, even more careful than the Dutch to make use of every square foot of ground.

How Belgium resembles and differs from Pennsylvania

Many of the farms contain only two or three acres, and most of the work is done by hand. For example, spading largely takes the place of plowing. Many of the crops are the same as in The Netherlands, although there are more sugar beets and fewer cattle, because other crops prove more profitable than grass.

In mining and manufacturing Belgium reminds one of Pennsylvania. Like the latter, it mines an enormous amount of coal, and much iron ore besides. With these minerals it manufactures great quantities of iron and steel, and machinery of many kinds. Glass is also an important product, just as at Pittsburgh. Cotton and woolen mills are numerous, as in New England; and sugar is made from sugar beets.

1. Explain the importance of the location of The Netherlands and

Review questions

Belgium. 2. How do they compare in area and population with Pennsylvania? 3. Show their contrast with



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Fig. 229. — Retting flax on the Scheldt River, Belgium
After flax is cut and stacked, it is soaked in clear water, so that the fiber from which linen is made may be separated easily. This soaking process is called *retting*.

Pennsylvania in appearance. 4. How does The Netherlands differ from Pennsylvania in industries? 5. In what ways is Belgium like a small Pennsylvania? 6. Describe a home in The Netherlands. 7. Compare a Dutch farm and its cultivation with a farm and its cultivation where you live.

1. Find the average size of our forty-eight states and compare it with the average size of these countries. 2. Show that there is no transportation route by water across France equal to that from Rotterdam across Germany. 3. Read the story about the little Dutch boy who saved many lives by holding his hand in

the leak in a dike until help came. 4. There is much shipbuilding at Antwerp. What conditions have favored its development? 5. Secure a picture of a Dutch wind-mill. Why do you suppose it is that their place is being taken by other kinds of pumping machinery? 6. Why are wooden shoes more practical in Holland than they would be in our country? 7. Why does Holland depend so largely upon rivers and canals as means of transportation? 8. If you were painting a picture of a Dutch scene, tell at least two things you would put in it. 9. What are the principal farm crops of The Netherlands?

Suggestions
for extra
work

6. The Scandinavian Countries

(Norway, Sweden, and Denmark)

These three countries are closely related in language and customs, and Norway and Sweden were for a long time united in one nation. These are known as the Scandinavian nations. Here the Norsemen, or Northmen, used to live. Do you know any of their old myths, or legends?

Norway and Sweden are much larger than Denmark. The areas of densest population of all three countries are close together. Locate the three leading cities and capitals, Oslo, Stockholm, and Copenhagen. If a triangle were drawn connecting the three, which would be the shortest side? How many miles long would it be? What water would be included in the triangle? What land?

The map shows that the coast of Norway is very irregular and mountainous. The sea enters the deep mountain val-

leys, forming long, narrow bays with steep walls. Such bays are called *fjords*. Some of the fjords are more than 100 miles long, and their walls 2,000 to 3,000 feet high. Here one finds some of the grandest scenery anywhere in Europe.

The attractions of the western coast of Norway to tourists

Many Americans visit this region in summer. Even though it is so far north, the warm winds from the Atlantic make the voyage delightful in that season. Besides the steep cliffs and deep, quiet waters of the fjords, many glaciers are to be seen. The tourist steamers cross the Arctic circle and go all the way to North Cape. There in midsummer one can see the sun at midnight. This part of Norway is called the *Land of the Midnight Sun*, because for a few weeks in summer the sun is in sight during the full twenty-four hours of every day.



Photo by Elmendorf © Ewing Galloway

Fig. 230. — A bit of Norwegian scenery

The streams in this picture are pouring down into one of the deep fiords along the coast of Norway.

The peoples of Norway and Sweden are famous sailors. Their ancestors sailed along the coast of North America 500 years before Columbus landed here. What stories or poems have you read about the Vikings, as these Norse sailors are sometimes called? In our own times, many of the most successful explorers of the polar regions have been Scandinavians. Can you name any of them? Scandinavian sailors are found in nearly every port.

If you inquired why so many become sailors, you would probably be told that it is because of lack of employment at home. A large part of the country cannot be inhabited. The northern parts of Norway

Why many Scandinavians become sailors

1. How they have become famous as explorers

2. The few occupations they can have at home

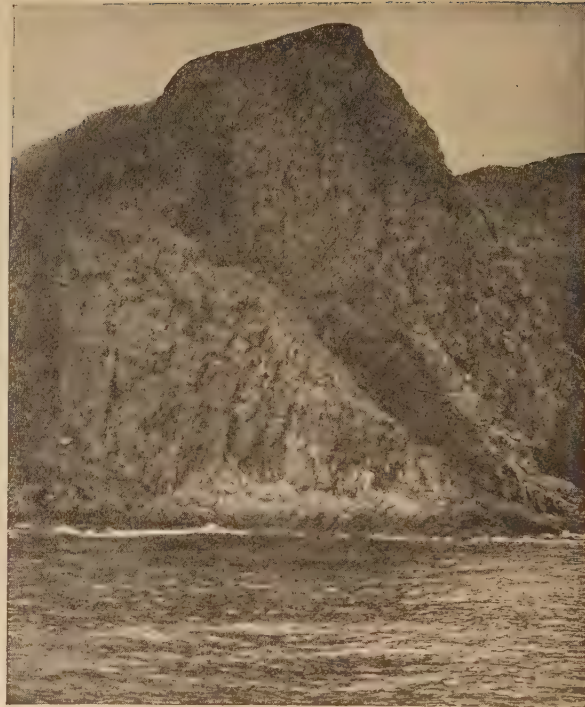


Photo by Elmendorf © Ewing Galloway

Fig. 231. — The North Cape

From this point on the northern coast of Norway the midnight sun may be seen in June and July.

and Sweden are too cold in winter, and much of the interior is too mountainous,



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Fig. 232. — Milking goats on a fiord farm

In many portions of Europe where pasturage is too poor for cattle, goats are raised for dairy purposes. Some of the most famous cheeses of Europe are made from goats' milk.

to support many people. Therefore, they make their homes chiefly in the southern part of the peninsula and near the coast. Less than one fifteenth of the surface of Norway can be cultivated, and in both countries only the hardy grains and vegetables can be grown. Sheep and cattle are raised in large numbers. The forests are extensive, so that lumbering is important. Examine some boxes of safety matches, to see if they have not come from Norway or Sweden. Yet lumbering is an industry that requires few workmen.



© Ewing Galloway

Fig. 233. — Goteborg harbor, Sweden

There is some excellent iron ore; but the lack of coal prevents the employment of a large number of people in manufacturing.

Denmark has little forest, and is the poorest country in Europe for minerals. Moreover, while it is not mountainous, the soil is sandy and not very fertile. Careful methods, similar to those used in Belgium, are necessary to till the soil successfully. Dairying and the manufacture of dairy products form the principal occupations.

On the other hand, the sea calls for a large number of men. Since the land produces so little, much of the food consists of fish; and both the North Sea and the coast of Norway are excellent fishing grounds. The export of lumber and iron ore and the import of coal call for much transportation by water. Since the people live along the coast and travel from town to town oftener by water than by land, they have become very familiar with the sea. Their abundance of lumber has made it possible for them to

3. Attractions
of the sea



Photo from Ewing Galloway, N. Y.

Fig. 234. — A public square and business street in Helsingfors, the capital of Finland

manufacture wooden vessels very cheaply. For all these reasons, the Scandinavians, especially the Norwegians, have engaged

1. Describe the attractions to tourists of the western coast of Norway. 2. What is the *midnight sun*? 3. Why

Review questions



Fig. 235. — On the coast of Spitzbergen
Norwegian vessels run even to this little settlement on the bleak coast of Spitzbergen (Fig. 46).

extensively in fishing and in ocean transportation both for themselves and for other nations. Norway has a larger number of ships compared with its population than any other country.

do many Scandinavians become sailors? 4. What common article do we use that comes from Sweden? 5. What is the chief industry of Denmark?

1. Do you see any reason for thinking that the Kiel Canal may have injured the trade of Copenhagen?

Suggestions for extra work

2. What part of the land in your state can be cultivated? How does this compare with Norway and Sweden? 3. Compare Denmark and The Netherlands

in area, population, surface, and products. 4. The government of Denmark used to charge toll for all vessels entering and leaving the Baltic Sea. Why were the Danes able to do this?

III. EASTERN EUROPE

Russia, Finland, Poland, and Neighboring Countries

A *monarchy* is a country that is governed by one person, such as a king or an emperor. An *absolute* monarchy is one in which the ruler has full power to do as he pleases.

The government of Russia was until 1717 the most absolute monarchy in Europe. How absolute a monarchy can be is suggested by some events in the life of Peter the Great, the ruler, or *Czar*, of Russia 200 years ago. In 1703 he began to build an entirely new city

on the Gulf of Finland, which was to be the new capital in place of Moscow, and is now known as Leningrad (p. 234).

At first he could not obtain enough masons to put up buildings; so he forbade all other construction of stone buildings throughout Russia. When the city lacked inhabitants, he required every man in Russia who employed as many as five hundred workmen to build a residence in the new city and to spend the winter there. In fact, his will was law. Other Czars of Russia ruled in the same way.

Difficulties in the way of progress

1. Bad government

The last Czar, however, was driven from the throne in the Revolution of 1917. Much of the property was taken away from its former owners, and nobles' palaces were turned into public museums or resting places. Factories were turned over to the workmen and country estates were divided among the peasants. The working people and their representatives got control of the government.

But the Russian people were not well prepared to govern themselves. Three out of every four men and women in Russia can neither read nor write. On that account the store signs in many places consist of pictures rather than words. For instance, a picture of a hat over a door means a hat store; a picture of a shoe, a shoe store. People who are so ignorant as that are not usually able to handle machinery skillfully or to do any kind of work well; and they are easily misled by politicians. The Russians understand this and are trying hard to educate their people so that they can profit by their new freedom from selfish rulers.

Yet Russia is one of the important countries of the world. This is partly because of its great size and population. The entire northern part of Asia belongs to Russia; but Russia in Europe occupies nearly half of all Europe, and Russian territory includes about one seventh of the land surface of the globe. Trace the boundaries of Russia, both in Europe (Fig. 193)

and in Asia (Fig. 265). The total population of Russia is not very far from 140,000,000. How does that compare with the population of the United States (Appendix)?

Its great resources also make it an important country. More than a third of Russia in Europe is covered with forest. The land is remarkably level; much of the soil is uncommonly fertile; and the climate in most sections is favorable to farming. It has plenty of coal and iron ore and ranks next to the United States and Mexico in the production of oil. With all these resources, it is bound to be one of the very greatest of nations as soon as its people become better educated and its government is trusted by other nations.

Four out of every five men are engaged in farming; no other occupation at all approaches it in importance. Most of the people, therefore, live in the country, and there are few large cities. Although Russia's

The principal occupation in Russia



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Fig. 236. — Peasant women gathering corn in the Ukraine

This grain is grown in large quantities in this region.

population is greater than ours, we have several times as many cities with more than one hundred thousand inhabitants. Make a list of the cities of Russia given in the Appendix.

1. Prominence of farming and interesting facts about it

The people do not live on their farms, however. Just as in France (p. 211),

are more acres in wheat, oats, rye, and barley than in the United States; and in some years more wheat has been raised there than here. Russia raises great quantities of potatoes, hay, flax, and hemp. In the extreme southern part the climate is so mild that cotton and tobacco are produced. The greatest difference in the crops of the two countries is in the corn; we raise far more of that grain than Russia does, chiefly because Russia has not warm enough summers.

Moscow is distinguished in two ways. It is the greatest manufacturing center in Russia. That country does very little manufacturing compared with the United States. Yet there is a considerable amount of it in some places; and in Moscow one finds large textile mills and factories for the manufacture of chemicals, leather goods, machinery,



Photo by P. A. Knowlton

Fig. 237. — Boat landing at a peasant village on the Volga

they live in villages containing from 200 to 500 persons and go out to the land each day to work. Can you imagine how such a level country would look with thousands of these villages scattered over it? Make a drawing to show how the country would appear from an airplane.

Northern Russia is too cold for farming, and the southeastern section is so dry that it is fit only for grazing.

2. How the farm products compare with our own

The land about the Caspian Sea is a real desert. Locate the desert region in Fig. 191.

The rest of the country produces crops similar to those of our country. There

and other articles. The thing for which Moscow is most distinguished, however, is the part of the city called the

Why Moscow is the most interesting city in Russia

Kremlin. Here the Czars were formerly christened, married, crowned, and buried. Here, also, they lived and worshiped; and as Moscow was the headquarters of the Russian Church, the oldest and finest cathedrals and monasteries, as well as palaces, were erected in that city. There are 1600 churches in the city; but on account of the Kremlin in particular Moscow is known as the holy city of Russia. The Russians call it Holy Mother

Moscow. In Fig. 193 notice the importance of Moscow as a railroad center.

The two leading seaports of eastern Europe are Leningrad and Odessa. Lo-

The two leading seaports of Russia cate each. How far apart are they? Russia is so level that it has been easy to connect them with the principal rivers by canals; and one can go from one of these ports to the other by several water routes.

1. Their advantages and disadvantages for commerce within Russia

There are some disadvantages, however, that such transportation suffers. Most of the rivers of Russia rise near the center of the country in the Valdai Hills, which are the highest land in the interior of European Russia. Locate these hills and name several rivers that begin there. The highest point there is only 1,150 feet above the sea, which allows a fall of only a few inches per mile for the rivers. On that account they flow very slowly and wind about so much that the distance between points upon them by water is often twice as great as by land. Since



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Fig. 239. — Cathedral of St. Basilica, Moscow
Note the peculiar shape of the Russian church steeples.

lumber is one of the chief exports, there are many timber rafts on the rivers, and it takes so long for these to reach their destination that families often build cabins for homes and even raise gardens upon them. Mention some of the pleasures you see in such a life. Aside from the many windings of the rivers, the Volga, which is the largest of all, indeed the largest river in Europe, loses much of its value because it ends in a desert region. Locate its mouth (Fig. 192).

The building of railroads in such a flat country is easy, and the map shows that



Photo by P. A. Kavelton

Fig. 238. — The food market at Kazan, Russia

In central and eastern Europe people buy most of their supplies, except in the winter, at outdoor markets. The people in this picture are poorly dressed but well fed.

there are many. Yet their number is small compared with the number in the United States. Russia in Europe has 36,000 miles of railway, while we have about 250,000. Try to explain the difference.

Both Leningrad and Odessa are a long way from the ocean. Trace the route that vessels must take to reach the Atlantic from Leningrad; from Odessa. Which is the shorter? Which port has the advantage in the winter? In case of

2. Their disadvantages for foreign commerce



Photo by P. A. Knowlton

Fig. 240. — War waifs in Moscow

In Russia there are many thousands of homeless children.

war, how many countries might block the way from Leningrad to the ocean? From Odessa? In spite of the great area and population of Russia, its entire foreign commerce before the war was only about two thirds as great as that of New York City alone; and now it is even less than that. What reasons can you give for so small an amount?

Odessa is a great center for wheat.

It has many flour mills, and is the chief port for shipment of wheat abroad. It has many fine streets and parks and is built around a beautiful bay. Parts of it were destroyed in the disorders that followed the World War, but these are slowly being rebuilt.

3. Interesting facts about these ports

Leningrad is much more important than Odessa as a manufacturing center, ranking next to Moscow in that respect. Compare it with Chicago in population (Appendix). It is located on marshy land at the head of the Gulf of Finland. Its climate is severe. Up to the time when Peter the Great founded this city, Russia had had more to do with Asia than with Europe. Peter changed the capital in order, as he said, that he might have a window looking out upon Europe. Why, do you suppose, was that desirable?

The city was until the Revolution the center of education and government. It is a city of beautiful streets and handsome buildings. The marsh has been drained into canals, which form some of the streets; and many bridges cross the canals and connect the islands. Can you imagine some of the winter sports there?

As a result of the World War, Russia has lost important territory. Finland (Fig. 193) has become independent; it is now a republic, having an area about equal to that of the British Isles and a

Russian losses of territory

1. Finland

population of about three and a half million. Its capital, Helsingfors, is, so to speak, right at Leningrad's door. Can you see any reason why the Russians might object to having the capital of a foreign country at this point? Finland is chiefly a farming country. It contains

many lakes (Fig. 192), with patches of farm land scattered among woods and marshes.

Poland, on the west side of Russia between it and Germany (Fig. 193), has also

2. Poland

become an independent republic. It has a population of about 30,000,000 and an area of nearly 150,000 square miles. Some of this territory has been won back from Germany and Austria, which had seized it many years ago; but the greater part, including Warsaw, the capital, and Lodz, was restored to it from Russia. Locate these cities. They are manufacturing cities, noted especially for textiles and iron goods. Coal and other minerals are mined near the boundary of



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Fig. 241. — A Polish peasant's home near Warsaw

How does this home appear to compare in comfort and attractiveness with the dwellings occupied by the poor in our own country?

Czechoslovakia. Partly for this reason, most of the large cities of Poland are in its southern or western part. How many do you find on Fig. 196? Northern and eastern Poland is chiefly a farming country.

Estonia, Lithuania, and Latvia (Fig. 196) are likewise independent nations. In

3. Other new countries

Latvia is the important port of Riga (Fig. 243). It was one of the chief Russian ports before the war, and part of the trade of Russia is still carried on through this port even though it is in a foreign country.



Photo from Ewing Galloway

Fig. 242. — Interior of a Finnish peasant's home

Finland is as far north as Alaska, and the warmly built but roughly furnished cabins of the Finnish peasants resemble the cabins of the Alaskan miners.

1. Tell about the government of Russia under the Czars. 2. Tell about the lack of education and the ef-

Review questions

fect it has had. 3. Why is Russia one of the most important nations? 4. State some facts about Russian farming. 5. Compare Russian farm products with our own. 6. Why is Moscow an especially interesting city? 7. Name and locate the two leading seaports of Russia. 8. What advantages have they for trade within Russia? 9. What disadvantages

it could have been secured, would have offered a better location for the new capital of Peter the Great than that of the Baltic Sea. 2. There are two other prominent routes from Russia to the ocean. Can you find them? 3. Russia consumes one fifth of a ton of coal per person each year, while the United States consumes five tons

Suggestions
for extra
work



Photo from Ewing Galloway

Fig. 243. — City of Riga, capital and chief seaport of Latvia

do they suffer for trade with other countries? 10. State some facts about each of these seaports. 11. What losses of territory has Russia recently suffered? 12. What can you tell about the surface features of Finland? 13. Tell what you can about the occupations of the people in different sections of Poland. 14. What other countries have become independent of Russia?

1. Here is a question for debate: *Resolved*, That the coast of the Black Sea, if

per person. What other differences between the two countries do these facts suggest to you? 4. What countries and bodies of water bound Russia? 5. Make a drawing of Russia, putting in the principal highlands, rivers, and cities. 6. Many Finnish people have settled in northern Michigan. Can you suggest why they have preferred to settle there instead of farther south? 7. Find out how Poland came to be divided among three of its neighbors.

IV. COUNTRIES OF THE WESTERN MEDITERRANEAN

1. Spain and Portugal

Spain and Portugal (Fig. 242) are located so much farther south than other well-known countries of Europe that one would expect them to have a mild, pleasant climate. With ports on both the Atlantic Ocean and the Mediterranean Sea, one might expect them to do a great deal of trading with other countries. As Spain and Portugal lie between Africa and central Europe, their railroads should offer one of the best means of transporting goods between the two continents. Likewise, since these countries are nearer the United States than any of the other countries of Europe, goods might be expected to enter and leave Europe through Spanish or Portuguese ports. Point out on Fig. 315 these advantages of location.

Yet the climate of most of the peninsula is not mild. Nearly three quarters of

the area is a mountainous plateau over half a mile above the level of the sea. Only a narrow strip around the edge and a few river valleys are low and have a mild climate. Point out some of these warmer sections on the map. How does the surface remind you of that of Mexico (Fig. 160)?

On account of this lofty plateau, it is difficult to get goods from the interior to

the coast for shipment abroad. For the same reason, incoming goods are not easily brought to the central region. Most of the rivers flowing from the plateau to the sea have many rapids and falls, so that they are of little use for navigation. The most valuable is the Guadalquivir. Trace its course. You can see that the mountainous plateau makes it difficult to build railroads across the peninsula. The lack of good harbors interferes still further with transportation. Lisbon has one of the finest harbors in the world, and Oporto a fair harbor. Two good harbors in Spain are Cadiz and Barcelona; but there are few others. Locate these four.

For these reasons goods cannot easily be shipped across the peninsula. It has not become, therefore, an important route between Europe and Africa, or between Europe and America.



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Fig. 244. — A public square in Lisbon



Photo by Elmendorf © Ewing Galloway

Fig. 245. — A landscape in southern Spain

The gorge between the cliffs is bridged by a tall, arched viaduct.

The foreign trade of Spain and Portugal together is in most years much less than one fifth that of France; and their rank is very low in comparison with other nations.

Spaniards are often easy-going business men. Many rich landowners have been content to allow overseers to look after their estates while they themselves spent their time in the cities. Madrid owes its size partly to this cause, since there is little manufacturing there.

The narrow strip of land lying between the plateau and the Mediterranean is very rich. In some years several crops are raised. On account of the lack of sufficient rain there, however, irrigation is necessary.

Near Valencia, where the gardens are famous, some of the irrigation works were built by the Moors, who were driven out of Spain several hundred years ago. Malaga is noted for its grapes. Dates, oranges, lemons, grapes, and raisins are raised for export to other countries, and rice, sugar cane, onions, beans, and peas for home use. The fertile Guadalquivir Valley is well known for its wines and olives.

On the plateau, however, the farming is poor. Although over half of the people are engaged in agriculture, they export little food. One reason for this is that they get most of their rain in the winter after the growing season. Another reason is the old-fashioned way in which the farm. Sometimes they still use wooden plows and thresh their grain by having horses tramp it out. Wheat, rye, flax, and grapes for wine are the principal crops there, and some sheep and cattle are raised.

Spain and Portugal are rich in minerals. Coal, lead, iron, zinc, tin, copper, and quicksilver are abundant, and there are deposits of silver. All the mountainous sections have one or more of these minerals. Yet the people have generally allowed foreigners to work the mines and export the products. These minerals should be a great source of wealth to Spain in the future.

If you were to visit Spain and Portugal, you would hardly find traveling as comfortable as it is in the United States. There are not many fast trains and the cars are not well heated in winter. When the trains are crowded no more passengers are allowed to get on. You

What the people do

1. Their love of city life

2. Only partial success in farming

3. The little use they make of their minerals

Discomforts and pleasures of a visit to these countries

old ones have had their boundaries greatly changed so as to include only the people who belong together. This is the principal reason for the very uneven boundaries. Trace some of them. Which countries have the sea or a river for a part of their boundaries?

Since these countries are especially important as a bridge between Asia and northwestern Europe, the leading railway may be expected to run northwest from Constantinople. Beginning

The principal railway through these countries

1. Reasons for its location

there, it follows the course that the hordes from Asia, who were bound for central Europe, long ago discovered to be the most level and, therefore, the easiest. Trace this road through Sofia, Belgrade, Budapest, Vienna, and Prague (Fig. 253). Notice that it goes on to Berlin. What countries does it cross? What capital cities are located upon it? Which of the countries in this region seems least benefited by this railway?



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Fig. 258. — Castle Karlstein, near Prague

This part of Europe has many such castles, built by royal families. Many of them are hundreds of years old.

Prague, the capital and leading city of Czechoslovakia, enjoys two advantages for manufacturing. First, coal

and iron ore are both found in large quantities near by. Second, the people

2. Leading cities on this route

a. Advantages that Prague enjoys

of Czechoslovakia are better educated than any other people in this part of Europe. With the advantages of education and the abundance of raw materials, it is not surprising that more and better manufacturing is done here than anywhere else in all these countries. Among the manufactures are metal goods, textiles, beet sugar, and



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Fig. 257. — A view of the famous churchyard in Hallstatt

The little town of Hallstatt is beautifully situated, as you see, among the Alps in the part of western Austria called the Tyrol.

glassware. Bohemian glass, made from the peculiar sand from the mountains near at hand, is famous.

Before the World War, Vienna was the fourth city in size in Europe; only London, Berlin, and Paris were larger. Austria, of which it is the capital, then included all the territory shown under that name in Fig. 253, most of Czechoslovakia,

b. *The past
and the future
of Vienna
and Budapest*

seems unlikely that Vienna can grow or even remain as large as it now is: How do you imagine this will affect its appearance?

The vast plains of Hungary grow large quantities of grain. Budapest, like Minneapolis (p. 95) and Odessa (p. 234), is an important center for milling and shipping wheat. Minneapolis, in fact, owes much to the Hungarian mills; for its

methods of producing flour were first extensively used in Budapest. The city is the capital of Hungary. It has a double name because Buda is on one side of the Danube River and Pest on the other, the two being joined by several bridges. Budapest has grown remarkably in recent years, but there is doubt about its future prosperity; for Hungary has less than half its former area, and its capital, like Vienna, has suffered seriously.

Constantinople has long ranked as one of the foremost cities of the world. Since

c. *Interesting
facts about
Constantinople*

it is located where Asia and Europe meet, it has attracted people from all the nations of the earth. As the capital of the Roman Empire of the East, it was for many centuries the leading center of government, art, and learning. A famous church there is nearly 1,400 years old and is one of the finest structures ever built.

In 1453 Constantinople was conquered by the Turks; and from that time



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Fig. 259. — Peasants plowing in Hungary

Notice the crude plow and the oxen. Do you think a farmer could cultivate much land in this way?

and much other land besides. Since it was the capital of so great a country, it contained numerous royal palaces, government buildings, and magnificent parks and drives. There were also many factories, and its manufactures, like those of Paris, were noted for their beauty. Now it is the capital of a very much smaller country which has only about one fourth its former population. Naturally, many people are poor and out of work. It

until the present it has been the chief city of the Turks. Under the Turkish government, however, it soon lost its leadership in the world and became a backward and old-fashioned city. For example, it has very few street names or house numbers. It is divided into quarters, and mail reaches a person by being carried to the quarter in which he lives, where further progress depends upon chance inquiries by the postman.

The backwardness and cruelty of the Turks helps to explain the many languages that are used and even the varied dress of the people; for the hundreds of thousands of foreigners from all sections of the earth who have settled there and now make up about half of the population have had no desire to adopt that country as their own, as foreigners become citizens of our country. Instead of becoming Turks they prefer to remain Greeks, or Arabs, or Russians; accordingly, each foreigner continues to speak his native tongue, and to dress as he did in his own country. Thus there are dozens of languages in use, and one who knows only two or three is often helpless. Common handbills and notices are usually printed in four languages.

Many times since 1453 European countries have been hoping to end the rule of the Turks in Europe. Turkey in Europe has become smaller and smaller after various wars, but the Turks have always been able to keep at least Constantinople and a small district around it. Now they are stronger than ever. Turkey has become a republic and has improved its government in many ways. The capital city is now Angora, in Asia. Find it on Fig. 275.

Two other capitals are located on this railroad. Name them (Fig. 248). Notice the tributaries that flow into the Danube near Belgrade.

*d. Location of
Belgrade and
Sofia*

What advantages in location has that city over Sofia? Do you see any disadvantages in the fact that the capitals of several of the Balkan countries are so close to the boundaries of other countries?

On entering Czechoslovakia from Germany by this route one passes through a gap in the mountains and comes out into a broad and nearly level basin almost surrounded by mountains. Prague is near its center, and in all directions

*e. Country
scenes along
this railway*



Photo from Underwood Press Service, London

Fig. 260. — The Bosphorus and the outskirts of Constantinople

In what continent is the land at the right?

from it there is highly cultivated land. In the growing season one sees fields of wheat, oats, rye, barley, potatoes, sugar beets, and hops; also many cattle and sheep. The scenes are similar to those in our North Central States, although the



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Fig. 261. — Peasant women of Yugoslavia spinning

Machinery is not used in these old European countries to the extent to which it is used in America. The women still do much spinning and weaving and the ways of living are much the same as they were in our country 150 years ago.

surface is rougher. On the mountains and in the wilder sections unsuited for farming there are extensive forests.

After one enters the plains of Hungary in the ride southeastward from Vienna, the views from the car window are much the same for a distance of more than 200 miles. This region resembles our western plains, having long stretches that are almost as level as a floor, no trees except in villages and along the streams, and

little to interest one except prosperous farms. This is one of the finest agricultural sections in Europe, and is noted for its wheat, corn, and live stock. In some of the more hilly portions grapes are extensively grown, and other fruits, such as plums, apples, pears, and cherries, are common. In what ways does this picture recall different parts of the United States?

On leaving Belgrade, the capital of Yugoslavia, one enters mountainous country again. Sofia, the capital of Bulgaria, is near the summits of the Balkan Mountains. On the south side of these mountains the climate is quite different from that on the north side. The countries so far crossed have hot summers and cold winters, like our northern states; in southern Bulgaria, however, the Balkans shut out the cold north winds and cause a very mild climate. On that account the crops vary greatly from those farther north. For example, roses are particularly common. On a spring day, as soon as the train enters the plain from the north, the fragrance of roses greets the traveler, and he sees hundreds of acres of rosebushes about him. They are raised for their petals, from which perfume is made.

A journey over this railroad gives a fair idea of the farm products of these countries. The different climate elsewhere, however, permits different crops. The western section that borders the Adriatic Sea has a mild climate and a heavy rainfall. In some places as much as 200 inches of rain falls in one year. East of the strip of heaviest rainfall the olive, mulberry, and grape

How the different climate elsewhere causes different crops

flourish. Still farther east the rainfall becomes less and less, so that the eastern parts of Bulgaria and Rumania are too dry for farming and are given up to grazing.

Greece lies too far south to be in the path of the rain-bringing winds, and what rain it receives comes mainly during the winter. The climate is mild, however, and, with the aid of irrigation, figs, grapes, olives, and tobacco are grown.

Only two of these countries, Hungary and Rumania, have extensive plains.

Leadership
of farming
compared with
other occupa-
tions

The plains are noted for their wheat and corn. Most of the surface elsewhere is mountainous, and agriculture is possible only in the narrow valleys. Yet, in spite of these disadvantages, it is the principal occupation throughout this region.

Which of these countries border the Mediterranean? Name some of their seaports. Which depend most upon the Danube for an outlet by water to the sea?

How the At-
lantic is
reached by
water

This river is

connected by canal in Germany with the Rhine (p. 219), so that goods bound for England can go west, as well as by way of the Black Sea and the Mediterranean. Trace each route to London from Budapest. Every one of these countries needs an outlet to the sea by water, particularly for such heavy and bulky freight as timber, oil, and grain. Transportation of such things by rail is too expensive.

The principal Mediterranean port for these countries is Saloniki. In ancient times there was an easy road from that point northward through river valleys to Nish in eastern Yugoslavia. A railway now follows that ancient route, connecting at Nish with the railroad from Berlin to Constantinople. This is, therefore, the chief rail route from these countries to the Mediterranean; and since the harbor at Saloniki is especially good, that city is rapidly growing in size and importance.

Why Saloniki
is the leading
coast city

Athens, the capital of Greece, is a little larger; but it lacks the advantage of direct rail connections with other countries. It is located six miles inland from its port, called Piraeus. In ancient times, before Rome reached its fullest grandeur and before Constantinople was heard of, this was the most important city in the world. The most civilized people were then collected about the eastern Mediterranean, and Athens was their leading center. Its buildings, its statues, its poems, and its

The impor-
tance of
Athens



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Fig. 262. — Old citadel at Saloniki

books were the finest in the world, and in many respects its works along these lines have never been surpassed. Some of the most highly prized treasures in the great museums of Paris and other European cities are statues that have come from ancient Athens. Along some of its streets

State some of the advantages that Prague enjoys. 5. What can you tell about the past and future of Vienna? Budapest? 6. Show how important Constantinople has been. 7. What has been the influence of the Turks upon it? 8. Describe the country scenes along the chief railway in



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Fig. 263. — The ruins of the Parthenon at Athens

Long before the time of Christ, Greece was the most civilized country of the world, with hundreds of ships on the Mediterranean, many cities, and some of the most beautiful buildings ever erected. The ruins of one of the most famous temples, the Parthenon, are shown in this picture. The Parthenon stands on the Acropolis (see below).

and on the flat-topped hill at the edge of the city called the Acropolis, are hundreds of statues, monuments, and ruins of buildings which are still very beautiful. In fact, these reminders of the distant past are the chief attraction to many visitors. How did the location of ancient Athens give it a great advantage?

1. Explain the importance of the position of these countries. 2. Give reasons for their many languages and uneven boundaries. 3. What course does their principal railway take, and why does it follow that route? 4.

the railway from Berlin to Constantinople; also the railroad to Saloniki. 3. Describe some of the costumes you would expect to see on the streets of Constantinople. 4. A surprising number of great cities are on very nearly the same parallel of latitude as Constantinople. Find several of them (Fig. 315), and explain why there are so many. 5. What reasons can you give why the capitals of Rumania and Bulgaria are not located on the Danube? 6. Read the story of the Greek boy Yanni, in *Child Life in Other Lands*. 7. Tell what a tourist in Greece should see. 8. Read about the little country called Albania, in a children's encyclopedia.

this region. 9. How do the climate and farm products differ near the western coast? 10. How prominent is agriculture in these countries compared with other occupations? 11. In what ways is the Atlantic Ocean reached by water from these countries? 12. Why is Saloniki the leading coast city? 13. Show the importance of Athens.

1. Make a drawing of the Danube River and locate the principal cities upon it.

Suggestions
for extra
work

2. Add to this drawing a line to represent

1. How does the coast line of Europe compare with that of South America? 2. In what general direction do the greatest highlands of Europe extend? 3. Name three other highlands that run in a different direction. 4. Name the countries of Europe that consist chiefly of highlands. 5. Of lowlands. 6. Name the countries that have no seacoast. 7. Name the countries that have areas below the level of the ocean. 8. What country has the largest number of lakes?

9. Would you expect to be able to see across the Strait of Dover on a clear day? 10. From Ireland to Scotland? 11. Most of the great cities of Europe are between the forty-seventh and the sixtieth parallels of latitude. Where does the same belt cross North America? 12. Canals are shown chiefly in the green areas of Fig. 196. Why? 13. Locate the capitals and largest cities of Great Britain; France; Germany; Poland. 14. Locate the Rhine River; the Danube; the Thames; the Seine; the Vistula.

15. Would you expect to be able to see across the Strait of Gibraltar? 16. The Strait of Messina? 17. From Corsica to Sardinia? 18. Locate Madrid; Lisbon; Naples; Rome; Milan; Venice; Genoa. 19. Which of the cities just named are important railroad centers? 20. Which one of them is situated on a plateau? 21. Are most of the great cities which you have studied so far highland or lowland cities? 22. Does the nearness of most cities to great waterways help you to answer the last question? 23. Locate Mt. Vesuvius; Mt. Etna. 24. To what country does most of Morocco belong? 25. Algeria? 26. Tunisia? 27. Between what countries of Europe are there high mountain barriers?

28. What boundaries of the countries of southeastern Europe appear to you to be natural? 29. Which appear to be artificial? 30. What country of southeastern Europe contains many islands that served the ancient mariners as stepping stones to Asia? 31. Locate Vienna; Budapest; Constantinople; Odessa; Saloniki; Athens.

Map
questions
on Europe



Fig. 265



PART V. ASIA

I. GENERAL FACTS

Since Asia is on the opposite side of the northern hemisphere from the United

Principal routes from the United States to Asia States, it can be reached by traveling either east or west. From San Francisco or Seattle one can cross the Pacific Ocean to Yokohama in Japan and then proceed farther to Shanghai or Hong Kong on the coast of China. This Pacific route is the easier.

Or one can cross the Atlantic Ocean from New York to Europe, and then proceed by rail across Europe either to Moscow in Russia and on into Asia, or to Constantinople. A third route leads from New York to the Strait of Gibraltar; then through the Mediterranean Sea to Asia Minor (Fig. 265) or to Constantinople; or through the Suez Canal around Arabia to India. Trace these routes in Fig. 315. Also follow them on a globe. Which one do you think would be the most interesting, and why?

Asia is larger than any other continent. Indeed, it is greater than North and South

How Asia compares with the other continents in area and population America together, or Europe and Africa together. It has more inhabitants, also, than any other continent. China alone has about two thirds as many people as all Europe, and India has more than any other country in the world except China. Find these two countries in Fig. 265. More

than one half of all the people on the earth live in Asia.

While it is easy to reach Asia, it is nearly impossible to cross it in most sections. Europe and Asia form only one body of land (p. 195); therefore the railroads of Europe might be expected to extend into Asia, all the way to the Pacific coast.

Some reasons why there is only one railroad crossing Asia east and west

Since Asia is so large and contains so great a population, many such trans-continental roads might be expected. Yet there is only one such road, and much even of it lies farther north than the most northern railway across Canada (Fig. 159). Why are there not several trans-continental lines in the southern half of the continent, just as there are several crossing the United States? Why is the only one located so far north?

The climate and surface features partly answer these questions. Western Asia south of the fiftieth parallel of latitude is a vast arid or desert land (Fig. 267). The Aral

1. Why there are few railroads in western Asia

Sea is in the midst of a region that receives only a few inches of rain per year; and, although great rivers, including the Volga, empty into the Caspian Sea, the dry climate causes its waters to evaporate so fast that it has no outlet. Its waters, therefore, are salty like those of Great Salt Lake.

Most of the territory extending from the Aral Sea all the way to Africa is arid. Name the countries included in this region. Nearly all of Arabia, for example, which is a peninsula about as large as all our states east of the Mississippi River, is a desert.

in the world. Mt. Everest, the highest peak, rises over 29,000 feet, or five and one half miles, above the level of the sea. Locate this mountain in Fig. 264. Point out other ranges farther west and north.

There are great stretches of level land among these mountains, but they are plateaus rather than low plains. One great highland is the plateau of Tibet, which is from two to three miles above sea level. That is higher than most of the mountain peaks in North America. This highland, consisting of mountains and plateaus, is even more extensive than the arid region in the west. Fig. 266 shows how high above sea level a train would have to climb in crossing central Asia. What difficulties do you see in building railroads there?

Neither the arid nor the mountainous section can support many inhabitants, because the one is too dry for agriculture without irrigation and the other is

too rugged and cold. A transcontinental railway, therefore, starting at the European boundary would have to run for thousands of miles through country that is either arid or mountainous and cold, and everywhere sparsely settled, before reaching the densely populated part of China. This makes railroad building almost impossible.

The one line across the continent is called the Trans-Siberian Railway. It

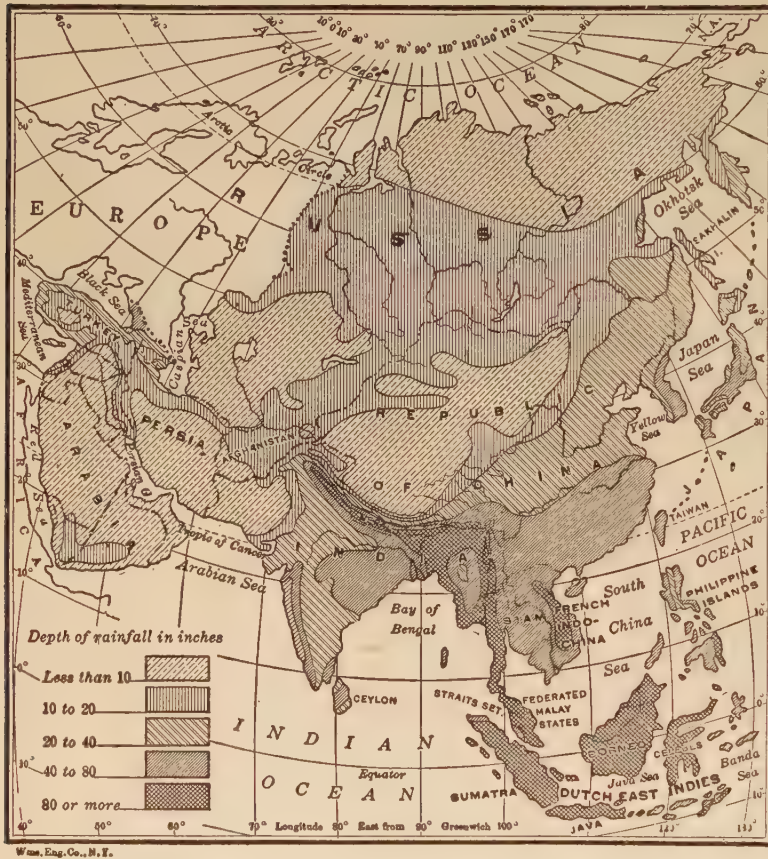


Fig. 267. — Annual rainfall in Asia

Notice that three of the five large areas in Asia where there is a rainfall of less than ten inches a year are in its southwestern part. Why would you not expect railroad building to be profitable here?

Farther east there is another barrier fully as great. That is the mountainous and plateau region in central Asia. Among the mountains are the Himalayas, just north of India, the loftiest mountain range

2. The check to railroads in central Asia

runs from Moscow in Russia to Vladivostok on the Pacific coast. At Moscow other lines connect it with Leningrad and Warsaw. Follow its route in Fig. 265. More rain falls along this entire line than in the country farther south about Aral Sea and in the western part of China (Fig. 265); and the mountains in the east are much lower and easier to cross than those farther south.

Throughout the whole distance, however, there is only a thinly scattered population; the people belong to several races, speak many different languages, and have different ways of living. It is doubtful if the road would ever have been built if Russia had not desired to move large armies across Asia to the Far East. Of course, such a railroad gives Russia an outlet to the Pacific Ocean. But what great disadvantages do you see in the use of this railroad for carrying freight and passengers from eastern Europe to the ocean?

1. Describe the route you would take from your home to Peking, China, and tell why you choose it. 2. Compare Asia with North America in area. 3. Tell what you know of the population of China; of India; of Asia. 4. Why is it difficult to make a trip across the continent of Asia? Why

Review
questions

are there so few railroads in the central part of Asia? 5. Locate the Trans-Siberian Railway.

1. Use a globe to find the time of day in Shanghai when it is noon at your home. 2. What is the distance from your home to Vladivostok? 3. On a train traveling thirty miles an hour, how long would it take to make a journey from Moscow to Vladivostok? 4. Why have explorers found it almost impossible to climb Mt. Everest?

Suggestions
for extra
work



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Fig. 268. — The Buddhist temple in Lassa, Tibet

The name of the god worshiped by the people of this country is Buddha, and their religion is called Buddhism. Lassa is a sacred city of the Buddhists. Only a few white men have seen it. Locate it on Fig. 275.

II. SOUTHWESTERN ASIA

The part of southwestern Asia that is of most interest to many people is a very small country called Palestine, near the eastern end of the Mediterranean Sea. Long before the time of Christ the Hebrews

The most
interesting part
of southwest-
ern Asia

escaped from Egypt and came to this country, which was their "Promised Land." They must have found it very inviting, since they said that it was "flowing with milk and honey." Here a nation sprang up with Jerusalem as its

capital. It was most prosperous in the time of King Solomon. Can you tell some of the events that happened here, as they are described in the Old Testament? Here also occurred the events that are told in the New Testament; for

in Fig. 275. Some of the best known Turkish rugs are made in and near Smyrna and are called Smyrna rugs.

Possibly you have seen advertisements of Turkish tobacco. This is one of the most important products of Turkey.

Other things that we receive from southwestern Asia are dates, figs, and olives. Still another is an especially fine kind of coffee. It comes from Mocha, and is mixed with other kinds of coffee to improve their flavor. Cotton, rice, grain, and garden vegetables are also grown.

Though these products of the soil are valuable, southwestern Asia is not able to raise more than barely enough of them for its own needs. One reason is that much of the surface of the land is mountainous. As shown by Fig. 265, which sections are they?

Why the products are not more important

1. Because of the surface and climate



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Fig. 269. — A village school near Jerusalem

Tell all the ways you can in which this school is different from yours.

this is where Christ lived and taught. On that account it is called the Holy Land.

From southwestern Asia we import many beautiful and interesting manufactured articles. In Persia and Turkey thousands of beautifully colored rugs, carpets, and shawls are woven every year. Locate those two countries

over almost all of this vast area; and water can be brought by irrigation to only a small part of the land.

The character of the people helps to explain the backwardness of this region. Although the Turks control much less territory than formerly, most of it has long been under their rule, and they have not been progressive. You have seen

The principal products that we obtain from southwestern Asia

to what extent they have done this in their old capital, Constantinople (p. 251).

They have done the same thing elsewhere. One of their worst customs concerns the collection of taxes. Instead of fixing a definite rate of taxes and paying men a salary for collecting them, it has been their habit to agree with some man to accept a certain amount from each district and to allow each collector to get his pay by collecting as much more as he can. Under such an arrangement few persons can save anything beyond the bare necessities of life, and modern improvements cannot be expected.

There is a prospect of an advance in some parts of this territory, for the Turks, as we saw on p. 251, are improving their own government. The British have taken over the section called Mesopotamia, through which the Euphrates and Tigris rivers flow. They have also taken control of Palestine, which had been under Turkish rule, while the French govern the rest of Syria. These two European nations will, no doubt, bring about many improvements. At the close of the World War, the Greeks were given a small area across the Aegean Sea from their European possessions. It included Smyrna, an old Greek city. But the Greeks attempted to gain still more land by waging war on the Turks. As a result, Turkey regained control of this area.

1. What is the most interesting part of Asia to us and why? 2. What name is given to the country surrounding Jerusalem? 3. What manufactured products do we receive from southwestern

Asia? What natural products? 4. Give two reasons why the products of this region are few in number and small in quantity. 5. Tell how the Turks collected taxes in the countries under their rule. 6. What effect did the World War have on Palestine?

1. The Jews who escaped from Egypt into Palestine called it the Promised Land and described it as "flowing with milk and honey." Does that country deserve this description now? If not, what has brought about the change? 2. Make a list of the places you would want to see if you made a trip to the Holy Land. 3. From what do the Persians make their fine rugs, and how are they woven? 4. Find out something about the growth of olive trees.

Review
questions

Suggestions
for extra
work

Changes in the
government of
this region



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Fig. 270. — A sword-maker at Damascus

These beautiful pieces of steel are made entirely by hand. The swords of Damascus have long been famous for their beautiful carving and keenness of edge.

III. RUSSIA IN ASIA

The traveler from Moscow to Vladivostok sets out on a journey of more than 5,000 miles, and even after crossing the Ural Mountains into Asia he still has 4,500 miles to go. Recall the distance from New York to San Francisco. At first he passes through level country where there are many farms.

What the traveler sees along the Trans-Siberian Railway

of them. Since the road was built not so many years ago, perhaps you can suggest why some of the towns are many miles from any railway station, and why others are on branch lines of the railroad.

After one crosses the Yenesei River, near the middle of Asiatic Russia, the scenery changes greatly. One enters a region of low mountains, which continue for many hundred miles. Farms almost disappear, there are great forests, and mining is an important industry.

Naturally the principal farm products form a large part of the freight on this road. The most important are wheat, cattle or meat, and butter and eggs.

Minerals, also, are prominent. Still other kinds of freight are brought long distances to the railway from both the south and north. Many caravans bring goods from the south; and the vast forests on the north, extending from the Baltic Sea to the Pacific, supply great quantities of

furs. The more common animals are the fox, sable, otter, ermine, wolf, bear, and gray squirrel. In this cold climate their fur grows especially thick and soft. Asiatic Russia now supplies more furs than any other country, not excepting Canada.

The most important interior city is Irkutsk, near the center of the route;



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Fig. 271. — Fishing in the Sea of Galilee

Both in ancient and in modern times this fresh-water sea, which pours its waters through the River Jordan into the Dead Sea, has supported many fishermen.

The farm products to be seen are the ordinary grains, particularly wheat; potatoes; onions and other vegetables; and live stock. How do these products compare with those in western Canada? The population is thin, and there are few large towns. Name several

1. The difference between the western and the eastern half of the journey

2. The products that one sees along the road

here there is extensive trading in silk, porcelain, tea, and furs. You will find out later where the first three of these articles come from (pp. 271, 272).

The region east of the Caspian Sea is also a part of Russia. The lack of rain

there would lead one to expect few cities. Yet the map shows several, the most important of which are Tashkent, Samarkand, Bokhara, and Khiva

(Fig. 275). What are the reasons for their growth? The fact that Bokhara and Khiva rugs are well known in the United States suggests one of them. While much of the region is semi-arid, there is enough grass to support large herds of sheep; and they produce the wool from which many of the rugs are made, as in Persia and Turkey in Asia (p. 262). Irrigation, also, makes farming possible. Cotton is grown here for use in the textile mills of Mos-

cow. The Russians are developing this region rapidly. Railroads have recently been completed from Moscow and from the Caspian Sea to Tashkent.

Yet there is another important reason for these cities. For many centuries the principal overland route between China and Europe led through these points. Marco Polo of Venice, the most celebrated traveler of the Middle Ages, crossed Persia and then passed north-eastward through this region on his way to China. Caravan routes leading from China, India, and Persia to Russia have

for ages come together in this section. The trade caused by the caravans led to the growth of these cities. Formerly the caravans traveled on to European Russia. Now, of course, goods are transferred here from caravans to railroads.

1. What is the length in miles of the Trans-Siberian Railway? 2. What differences in the country would a traveler notice in making a trip from Moscow to



Fig. 272. — A part of Vladivostok and its harbor

Vladivostok? 3. What farm products and other goods would he find for sale? 4. Name the fur-bearing animals of Siberia. 5. Why have cities like Tashkent thrived although they are located in a semi-arid country?

1. The Russians encourage the many different peoples in Russian territory to keep their own languages and customs and to govern themselves. What are some of the advantages and disadvantages of such a plan? 2. Why are there no seaports on the northern coast of Asiatic Russia?

Review
questions

Suggestions
for extra
work

IV. INDIA, INDO-CHINA, AND THE MALAY PENINSULA

The vast region known as India is about half as large as the United States

Ease of
travel

and is part of the British Empire (Fig. 315). The English have made many improvements there. Many railroads have been built, so

Trace the French possessions. Locate the independent country of Siam.

In Fig. 275 note the latitude in which most of India lies. As you might expect from this latitude, it has a warm climate. It also has a

The season
in which to
visit India

wet and a dry season. During the dry season northeast winds from the heart of the continent blow over India, bringing little or no moisture. There is so little rainfall in some years that the water supply gives out, crops dry up, and the people suffer from severe famines. It is also intensely hot on the plains, and white men can live comfortably only in the mountains where it is cooler. It is evident that traveling would not be



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Fig. 273. — Delhi, the capital of India

that one can now reach almost any part of India by rail. In fact, India has more than half as many miles of railroad as all Asia.

At any of the large ports at which you might land, as at Bombay or Calcutta, you would find a European section resembling one of our own cities. Moreover, you could make yourself understood in your own language; for, although there are many native tongues, English is commonly used in business affairs.

The countries east of India also enjoy a certain amount of modern conveniences, for several of them are under the control of European nations. In Fig. 265 locate Singapore, an important British city at the southern end of the Malay Peninsula.

enjoyable in this season.

In the wet season, which comes in our summer, winds blow over the land from the direction of the sea. Abundant rain falls over much of the country, and crops flourish. Northern India and parts of the Malay Peninsula have the heaviest rainfall in the world. Although the heat is still great in the rainy season, it is not so intense as in the dry season. This, then, is the season to choose for visiting India.

Probably you would be more impressed with the peculiar customs of the people than with anything else you might see. You would soon notice that the Hindus, as the people of India are called, are divided into classes, or *castes*; unlike ourselves,

they do not believe that all men are born free and equal. On the streets you would see mainly the lower castes, to which belong the poorer people—the shopkeepers, servants, laborers, and beggars.

Some customs of the people which would seem strange to us

If you wonder why so few of the upper castes appeared, you would learn that it is because they think it degrading to mingle with those of a lower caste. They will not eat at the same table with them, nor will they taste food on which so much as the shadow of a person of lower caste has fallen. How might such a belief prevent progress?

The Hindus have many beliefs which would seem strange to us. Every year, for instance, thousands of them travel long distances to the Ganges River, for they believe that its waters are sacred and that bathing in them washes away disease. In Siam you would find that next to the king, many of the natives hold the white elephant in highest respect. Siam is often called the land of the white elephant.

As you traveled through India you would find about

The occupation in which most of the people are engaged

three fourths of the population living in the country, since

farming is the chief occupation. Millet is the chief grain of many of the people because it can be raised even in the drier sections. Another important

grain is wheat. Great quantities of rice are grown on the flooded lowlands both in India and in the Malay Peninsula. In the Malay Peninsula there are many large rubber plantations. You would also see cotton, sugar cane, tobacco, and poppies from which opium is made. Spices and tropical fruits grow in southern India and in the region north of Singapore.

Tea is a very important crop. You would probably visit a tea plantation. The tea plant thrives best on a hillside where the water can drain off quickly.



Fig. 274. — In the native section of Bombay, India

Many of the cities of the Orient have a foreign section that is modern and resembles our own cities in many ways, and a native section where the natives live much as they did before Europeans came.

It grows from two to four feet high, and has leaves resembling those of a rose-bush. The leaves are picked several times a year, and are carefully dried





Fig. 276

before being packed. Boys and girls often help in the picking.

Trace in Fig. 265 the course of the Ganges River. In what mountains does it rise? Note the great extent of its basin. That is the part of India you would be most likely to visit, for it has the most fertile land and over a third of the immense population lives there.

than in almost any other part of the world, the river floods much of the valley and deposits over the fields a thin layer of rich soil washed down from the mountains. For these reasons the Ganges Valley is able to support one of the densest populations of the world.

You would pass hundreds of temples along the banks of the river, for, as we have seen, the natives believe the Ganges



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Fig. 277. — Elephants hauling logs in India
In India the elephant is a common beast of burden.

In the lower part of the delta you would pass through a dense tropical jungle, where tigers, elephants, crocodiles, poisonous snakes, and many other dangerous animals live. About forty miles upstream from one of the mouths of the river is Calcutta, the largest city of India.

Northwest of Calcutta you would travel through one of the oldest farming regions of the world. Rice and many of the other crops already mentioned grow here, several crops each year. Throughout the dry season the Ganges supplies water for irrigating the crops, and during the wet season, when more rain falls here

is sacred—probably because it is so valuable in irrigating and fertilizing the land. In the holy cities along the way you would see many of these temples, and flights of steps, thronged with bathing pilgrims, leading into the water.

1. What facts help to make traveling easy in India? 2. In what season could one best visit that country? 3. Mention some of the strange customs of the people. 4. Tell about the importance of farming, and name the leading products. 5. Why is the Ganges Basin the most interesting section to

Review
questions

visit? 6. Locate the following: India; Calcutta; Himalaya Mountains; Siam; French Indo-China; Singapore.

1. Read Kipling's *Jungle Book*. 2. On a globe find which is the shortest water

route from Bombay to London. 3. What important products would you expect India to send to Great Britain? What would you expect Great Britain to send to India in return?

Suggestions
for extra work

V. THE FAR EAST

1. The Chinese Republic

The Chinese are one of the oldest civilized races. They had made many discoveries long before the time of Christ. Therefore, it is not strange that some of the most important arts that man has ever learned have come from them.

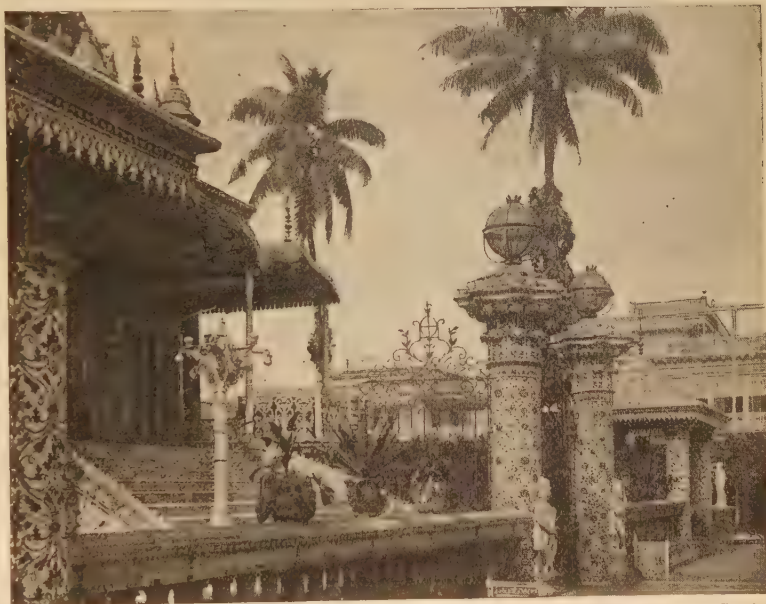
For instance, they learned to make porcelain dishes long before the Europeans; on that account such dishes are still called *chinaware*, even though manufactured in the United States or in Europe. The Chinese invented gunpowder. Our firecrackers for the Fourth of July used to come from China. You may still see packages of firecrackers marked in Chinese characters. The Chinese also discovered how to make silk from cocoons and paper from plant fibers. They were the first to steer ships by the mariner's compass.

What articles from China have you seen?

You would be likely to feel at home in China so far as the climate and appearance of the country are concerned. In Fig. 315 compare the latitude of China with that of the United States. How many

degrees farther south does China reach than our most southern state, Florida? How many miles (p. 47)? How many degrees farther north than our north boundary? How many miles? From this comparison

How China
resembles and
differs from
United States



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Fig. 278. — A temple in Calcutta, India

What differences do you notice between these buildings and those of our own country?

it is plain that most of China has a temperate climate. The distance from east to west across China is about as great as that across the United States. From the Chinese coast you would travel westward over

1. Likeness in
climate and ap-
pearance of the
country

broad, fertile valleys resembling those of our Mississippi Basin. Beyond these lowlands rise vast plateaus (Fig. 265) which remind one of our western plains; for the chief occupation is herding,



Photo from Underwood Press Service

Fig. 279. — Terraced hillsides in China

In this way steep slopes can be used for farming.

and there are large desert areas where even that is impossible. Along the western border extend many lofty mountain ranges. What great plateau lies in the southwestern part of China (Figs. 265 and 266)? What important seacoast region in our country is unlike any section in China?

Since the climate of China is somewhat like our own, we may expect many of the same farm products that are raised in the United States. Wheat, barley, corn and other

grains, and beans, peas, and many kinds of vegetables are grown in northern China. In the south sugar cane, cotton, and oranges are grown. Rice, of which we raise only a little, is a principal crop and one of the chief articles of food for the Chinese. Among the important products which we do not produce are tea and raw silk; China produces more of the latter than any other country in the world except Japan.

The Chinese cities and towns appear very different from our own. In our large cities, such as New York or Boston, the foreign quarter is likely to be shabby and run-down, while the native section is well built and well kept. In the Chinese cities and ports where foreigners—British, French, Americans, and others—are allowed to make their homes, the opposite is true. The foreign colonies, like those of Shanghai and Hong Kong, are made up chiefly of Europeans and are much like American or European cities. The native sections of these cities, although they have some fine homes, are generally crowded and dirty, with narrow, unpaved streets, and without water pipes, sewers, or lights.

Many of the cities are surrounded by high walls with gates that are closed at night, as was the case in European cities in olden times.

The houses, seldom more than one story in height, are built close together, and the stores have gaudy decorations and signs. The streets are crowded with *jirikishas* (two-wheeled passenger vehicles) and chairs on poles carried by men called *coolies*; with men pushing wheelbarrows or drawing low, heavy carts;

3. Differences
in appearance
of cities

2. Likeness in
farm products

with peddlers carrying baskets slung from poles across their shoulders; with cripples and diseased beggars seeking alms; and with women carrying children on their backs. In Peking (renamed *Peiping*), where there are many wide streets, most of the streets are too narrow for automobiles, and since most of them are not paved they are worn in deep ruts, and after rains are full of mud-holes.

Many of the cities are so crowded that great numbers of the people live in boats on the harbors and rivers. This is especially true in Canton, the largest port of southern China. Chickens are kept, and even gardens are raised, on many of these boats. Locate the cities mentioned on Fig. 276.

Traveling accommodations in China are not so convenient as they are in this country. China has very few railroads; and only a few cities in the interior can



Photo by Elmendorf © Ewing Galloway

Fig. 280. — Market scene in Hong Kong

Study this picture with the text to the left.

be reached by rail. In Fig. 276 trace the railroad lines. In what sections are they

found? What 4. Difference
important cities in ways of travel
do they connect? Between Chinese seaports and river ports, travel is generally by water, and good accommodations can be secured on the larger river boats. Since the rivers are open to navigation far up toward their sources, the easiest way of getting into the interior is by boat, especially on the Yangtze River. Trace this river on the map.

Canals connect many of the rivers with one another, and also many of the cities. Find the Grand Canal on the map and tell what cities



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Fig. 281. — A Chinese orchestra

The sounds made by these players are very different from what we call music. Notice the strange kinds of instruments. What, do you suppose, do people of other countries think of *our* music?



Fig. 282. — One of the gates through the walls of Peking

Many cities of China have walls similar to the one here shown. This wall is from forty to fifty feet high and about sixty feet thick at the bottom. It is made of clay and plaster faced by brick. It was built to keep out robbers from the desert to the north. Do you think it would keep out an army with heavy cannon?

it connects. Poles, oars, and sails take the place of steam, and traveling is naturally very slow.

Chinese roads are greatly inferior to ours. Most of them are narrow and in bad repair, so that automobiles and trucks cannot usually pass over them. In northern China, however, especially in Manchuria and about Peking, there are some good wagon roads over which people travel in two-wheeled covered carts, drawn by donkeys or horses.

Across the desert of Gobi travel is usually by camel, and it is not unusual to see in the streets of Peking camel trains bearing loads of grain or passengers from Mongolia.

Traveling by wheelbarrow is common over the narrow footpaths of the interior. Pack horses and donkeys are also often used (Fig. 283), especially in mountainous parts of the country.

Travel by automobile is not possible except in the neighborhood of the large cities, where many American cars may be seen.

The river plains of eastern China are more thickly populated than any other region in the world. In-

5. Differences in appearance of farms

deed, if we do not count the desert and mountain regions, China is almost as thickly settled as the state of Texas would be if all the people of the United States lived there. It is, therefore, no wonder that the Chinese farms are small. We should hardly call



Fig. 283. — Traveling by donkey through a Chinese village

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them farms at all, for the majority have only about two acres of ground. On this area must be grown all the different things required to support one family. Thus you might see a flooded half acre of rice, for instance, with beans growing on ridges on the sides, and with perhaps a few mulberry trees on raised ground in one corner.

The methods of farming are also very different from ours. Most of the work is done by hand, with the aid of crude implements. Why can little farm machinery be employed? Some of the land is irrigated; and water is pumped or carried from the rivers and canals not only to land of moderate slope, as in the United States, but also from terrace to terrace, to the very tops of the hills.

Chinese children are brought up very differently from children in our country.

Much of the instruction of children is given them by their parents, and they are taught very thoroughly to obey and respect their parents and superiors.

Until recently there were no public schools such as we have, and only the well-to-do parents could afford to pay tuition for private instruction. Whenever parents were able, they sent their boys, and sometimes girls, to some private or mission school to learn to read and write the simplest Chinese characters.

At the present time China is trying to provide public schools for both boys and girls, and there are some good public elementary schools in the cities. Except in times of war, there are also excellent mission schools in which Chinese children are being educated.

One of the chief reasons for the differences between China and the United

States is found in the religion of the Chinese. They have believed that whatever their ancestors did, they must do. Since their fathers had no railroads, steamboats, or automobiles, they have wanted none themselves. Thus their progress has been checked, and they have been kept from adopting European and American ways of living.

Some of the reasons for these differences

6. Differences in training of children



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Fig. 284. — Chinese children of Canton

Another reason why the Chinese have made but little progress has been their dislike of everything new. They have been unwilling to learn about new things. Until recently they had never traveled much abroad, and disliked to have foreigners visit them. In fact, they have looked down upon foreigners because they have strange customs.

A third reason has been the poor government of China, which was long a monarchy. China's vast area, with many

different groups of people, has made it very difficult to govern. A few years ago China became a republic, and some improvement was made in the government. More recently, however, there has been civil war between the leaders of different districts. Even in times of peace it is hard for the dense population to make a living. Only the future can tell whether the Chinese can put their government in order and make their country prosperous and progressive.

1. Tell about the progress of China in early times.

2. How does China resemble the United States in climate and appearance?

3. In farm products?

4. How do the Chinese cities differ from ours?

5. The ways of travel?

6. The farms?

7. State some facts about the education of the children.

8. Locate Peking; Shanghai; Hong Kong; Canton; Hankow; the Hwang River; the Yangtze River; the new capital, Nanking.

1. Find out about the great wall of China.

2. How can you distinguish a Chinese from other men?

3. Why should China have an even greater variety of farm products than the United States?

4. How would you expect the Grand Canal to be of importance to Peking?

5. How might railroads help greatly to

prevent the terrible famines that sometimes occur in China? 6. Write a letter about a trip up the Yangtze River. 7. Why are nearly all the important cities of China in its eastern section? 8. Describe the dress of the Chinese.

2. The Japanese Empire

The best way to reach Japan from the United States is to take a ship at San Francisco or Seattle and

How to reach Japan from the United States

cross the Pacific. If one desires to go directly to the capital and largest city, Tokyo, one travels by steamer from Seattle to Yokohama, the port of Tokyo. This route is the shortest and quickest way to cross the Pacific.

On Fig. 315 compare

the length of this trip with that from New York to London. By taking a steamer at San Francisco one can visit the Hawaiian Islands on the way. Trace both routes in Fig. 315.

For more than 200 years before 1854, foreigners were shut out of Japan and the Japanese did not go abroad.

They wanted to have nothing to do with other countries.

Great changes in Japan in recent times

But in that year they began to trade with us, and shortly afterward Japan was opened freely to all foreigners and the Japanese themselves began to go abroad. Since the Japanese have begun to exchange



Fig. 285. — Japanese girl

Notice the idol. What do you think the girl is doing?

Review questions

Suggestions for extra work

ideas with other countries, a great change has taken place in Japan. It has adopted many foreign customs, introduced modern machinery, built railroads, and made many improvements.

Even the Japanese government has been changed; it is now patterned very much after that of Germany before the World War. Modern ideas on war have been especially copied by the Japanese, who have taken pride in developing a powerful army and navy. Indeed, the Japanese navy is now ranked among the most powerful in the world.

One of the causes of Japan's desire for military strength is its need for new territory on account of its dense population. Because of this need, Japan has added extensively to its territory since 1895. In that year the island of Formosa was obtained from China. Later, after defeating Russia in war, Japan received important rights in Manchuria and later got possession of the large peninsula of Korea, now called Chosen (Fig. 276), just west of the principal island of Japan. At the close of the World War Japan was given many of Germany's island possessions north of the equator in the Pacific Ocean. In this way it has gained very important possessions on the continent and in the neighboring ocean regions.

In the great change that has taken place in Japan in recent years, there are many old customs, ways of doing things

and ways of thinking about things, that the Japanese have not changed. The traveler in Japan will see, therefore, interesting mixtures of the old and the new. Wide differences are noticed in methods of transportation. In the cities electric cars are filled with people as in our own large cities; and at the same time men largely take the place of wagons in carrying heavy burdens. Jinrikishas (p. 272) are seen on the streets side by side with automobiles.

Interesting mixtures of the old and the new in Japan

At the hotel the visitor notices a sign stating that rooms and meals are provided both for Japanese and for foreigners,



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Fig. 286. — Threshing rice in Japan

Rice grows on stalks and must be threshed like wheat. The grain is being separated here by pulling the heads of the straw through slits in a piece of metal. Why do these Japanese not have threshing machines as we do in our country?

and he is likely to spend an unpleasant night if he forgets that he is a "foreigner" in Japan. The Japanese have no tables, chairs, or beds, and little other furniture

in their houses. They sit on mats and sleep on thin mattresses laid on the floor. The houses are small, generally with thatched roofs. The windows, doors, and

ments. Yet many families draw the silk from the cocoon by old-fashioned methods, by hand.

Small fields of rice, called *paddy* fields,



Fig. 287. — A Japanese temple

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partitions are usually made of decorated panels or screens.

A visitor finds modern paper factories and cotton mills such as we have; and at the same time thousands of families manufacturing paper by hand in their homes, while spinning and weaving are carried on in many of the households. There are great silk factories; for Japan leads the world in silk production. A large part of our raw silk comes from Japan, and Japanese of nearly all classes wear silk gar-

surrounded by irrigation ditches, are to be seen in almost every valley. Rice is the most common food and is often eaten with fish. Until recent years meat and milk, butter and cheese were almost unknown. Dairying is now beginning to be introduced.

1. Describe two routes from the United States to Japan. 2. Why has Japan changed greatly in recent years? 3. What are some of the changes? 4. Why is

there a mixture of the old and the new in Japan? 5.

Review questions Give examples of the old and the new that a visitor in Japan might expect to see.

1. Try to show in Fig. 315 how one might reach

Suggestions for extra work Tokyo by going eastward from the United

States. 2. Make a collection of Japanese articles such as fans, paper napkins, silk, etc. 3. How does Japanese printing differ from ours? 4. Write a composition on Japanese children, describing their clothing, their work, and their play. 5. If you were to dine in a Japanese home, what foods would you expect to have served to you?

1. Does the mainland of Asia extend farther north than that of North America? 2. In what ways are the Lena and Mackenzie rivers like each other? 3. In what way do Tibet and Bolivia resemble each other? 4. What oceans bound Asia on three sides? 5. Show that the chief highlands of Europe are an extension westward of those of Asia. 6. What countries of Asia are



Fig. 288. — A small village in Chosen (Korea)

The Koreans resemble the Chinese in many ways. What do you think the two persons at the stream are doing? Find this country on Fig. 276.

chiefly lowland countries? 7. What countries of Asia are chiefly highland countries? 8. What countries contain large areas of both highlands and lowlands? 9. Locate the Ganges River; the Yangtze River; the Hwang River. 10. Is the latitude of most of the large cities of Asia nearer to that of the large cities of North America or to the latitude of the largest cities of Europe? 11. Locate the capitals and largest cities of India; China; Japan. Is the capital always the largest city? 12. Name four important peninsulas of Asia. 13. Two important seas. 14. What possession of the United States lies southeast of Asia?

Map questions on Asia







PART VI. AUSTRALIA, NEW ZEALAND, AND THE ISLANDS OF THE PACIFIC

I. AUSTRALIA

When the English took possession of Australia over a century ago, they found strange plants, animals, and people there. Many of the plants were unlike those in any other part of the world and were of little use. Giant trees, nearly as large as those of our Western States, were found growing along the eastern coast, and in the forests were great tree ferns. Part of the interior was covered by low bushes having hard, prickly leaves, and often growing so densely that it was difficult to pass through them.

Some reasons why Australia used to be thought of little value

kangaroo, which instead of running on all fours jumps along on its hind legs, using its tail for support as shown in Fig. 293.



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Fig. 293. — Kangaroos



Wap. Eng. Co., N. Y.

Fig. 292. — Annual rainfall in Australia

None of the domestic animals used to produce food or to carry goods, which are common in other continents, was found there. The largest animal was the

Moreover, the native people were a very low class of savages, whom it was difficult to teach.

Chiefly because of these conditions, Australia seemed to be of little importance. At first it was used by England chiefly as a prison colony, to which criminals were sent. It was a very secure prison, too, for there was little danger that a man sent there would soon reach home again.

As the continent came to be better known, however, people began to go there of their own accord to live. Now Australia has about 6,000,000 inhabitants. Com-

pare its area and population with those of the United States (Appendix). Most of the white inhabitants live in the southern and eastern portions. Let us see why. The temperature is not the chief reason, for that is pleasant enough in a large part of Australia. Prove this by means of the latitude shown on the map (Fig. 289). What portion of Australia is in the tropical zone?

The great difficulty is the lack of rain, which is due to the location of the mountains and the direction of the winds. The larger part of Australia is a low plateau, with the chief mountain range on the

interior. This causes heavy rainfall on the eastern slopes; but as the winds continue on toward the interior, they become very dry. At a distance of 350 miles from the coast, it is so dry that farming without irrigation is impossible. Still farther west there are extensive deserts.

If you examine Fig. 289 you will see signs of the desert, for some of the rivers flow into lakes that have no outlet. These lakes, therefore, are salty, like the Great Salt Lake of Utah. There is so little rainfall west of the chief mountain ranges that the Murray River becomes smaller toward its mouth, and its chief tributary, the Darling, dries up almost entirely in its lower course. Locate these rivers.

When it is remembered that the northern part of Australia has a tropical climate, and that the central and western parts are arid or semi-arid, it is easy to understand why most of the people live in the southeastern part. Most of the good farm land is found there. The chief river, the Murray, is there also, and so are the principal cities. In Fig. 290 find four of the largest.

Since the plentiful rainfall in the southeastern section favors agriculture, the English settlers have imported to this region many of the plants and animals common



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Fig. 294 — Tree ferns in a well-watered part of Australia

These huge ferns give the scene a tropical look, yet this picture was taken in the part of Australia farthest from the tropics — Tasmania.

eastern side. Point out these mountains on Fig. 289.

The prevailing winds come from the southeast, so that they must blow over these mountains before reaching the

at home. The climate is like that of our southeastern states, and many of the same crops are grown. Wheat is the largest crop, for it can be grown not only on the eastern slopes of the moun-

tains, but, with the aid of irrigation, on the western slopes also. Along the coast, where the rainfall is greatest, corn, cotton, sugar cane, and tobacco flourish, as well as fruits and vegetables such as

How rainfall has influenced occupations of the people

1. Importance of farming in well-watered portion

are raised in our own country. In the states of Victoria and Tasmania there is excellent pasturage, and dairying is an important industry. In the drier region about the mouth of the Murray River there are large vineyards, the grapes being grown for raisins or to make wine. Tropical fruits flourish toward the north, in the torrid zone.

West of the mountain ranges is a vast plain, having too little rainfall

2. Why sheep and cattle raising is the principal industry

for the cultivation of crops but enough to pro-

duce good grass. One of the greatest pasture regions in the world lies between these mountains and the deserts in the central and western portions. Vast grasslands stretch for many miles, varied only with scattered trees or patches of bare sand and rock.

Cattle are raised on the western slopes of the mountains, particularly in Queensland, where the warm, moist climate affords good pasturage. Sheep thrive on poorer grass than do cattle, and beyond the cattle ranges, up to the very edge of the deserts, there are great sheep ranches. New South Wales, south of Queensland, has half of the sheep in Australia. Aus-

tralia has long been known as one of the greatest of sheep countries; nearly a sixth of the world's sheep are raised there.

One great difficulty is that what little rain there is comes very irregularly, and droughts often last for long periods,



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Fig. 295. — Sorting wool for shipment

Consult Fig. 289 to find the part of Australia in which this picture was probably taken.

sometimes causing millions of sheep to die of thirst or starvation.

Australia has become of great value to England as a source of food. Recall some of the reasons why England is very dependent on her colonies for food (p. 208). Wheat has long been one of the chief exports to England. The fast refrigerator ships of the present day have made it possible to send perishable foods all the way to England. Thus a large portion of the frozen beef and mutton consumed in that country comes from Australia. Butter, cheese, and other dairy products are shipped in

Why Australia is now one of the most important parts of the British Empire



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Fig. 296.—Bringing wheat to a railroad station in Australia

Many Australian ranches are fifty or more miles from a railroad. This wheat will probably be shipped from Sydney to Europe.

large quantities, as are also vegetables and fresh fruits.

Important raw materials used in English manufactures also come from Australia. From what you have already read, what

important textile material would you expect Australia to export? Indeed, Australian wool is considered the best in the world. As might be expected, many of the hides used in leather manufacture in England come from that continent.

A large variety of mineral resources has been found since the continent has become better known. There are valuable deposits of silver, copper, tin, coal, and other minerals. Gold is the most valuable mineral, however, and Australia

has become one of the chief gold-producing countries in the world. In Fig. 290 locate Kalgoorlie, in the western desert, where the most important gold mines are located.

II. NEW ZEALAND

In Fig. 289 locate the two large islands of New Zealand, lying southeast of Australia. Measure their distance from Australia. If you visited New Zealand, you would find that it is a farming country like Australia and that similar products are raised. But it has a pleasanter climate, for it is cooler and has more rainfall. Therefore there are no deserts in New Zealand as there are in Australia, and there are fewer obstacles in the way of successful farming.

A visitor would probably enjoy the scenery most, for it is especially fine. The surface of the islands is very rugged, and

there are many lofty mountain peaks. Heavy snows fall upon the higher mountains; from these snow fields large glaciers descend the mountain valleys. The snow-capped mountains and fiords are as beautiful as those of Norway or of the "Inside Passage" along the northwestern coast of North America (p. 143).

There are also some remarkable volcanic regions where the ground itself is merely a crust beneath which boil vast quantities of liquid mud. Over this region rise clouds of steam, and there are many hot springs, lakes of boiling water, and geysers more magnificent than those of the Yellowstone Park (p. 134).

Why a visit to New Zealand would be enjoyable

III. THE EAST INDIES

Between Australia and Asia are some very important islands. Most of them are small. Java, however, is about the size of the State of New York, and Borneo is about six times as large. What other large islands do you find in Fig. 290? All these islands together form a group, or *archipelago*, known as the East Indies.

It was these islands, as well as India and the Malay Peninsula, that Columbus was trying to reach when he discovered America (p. 35). He undertook his voyage in order to find a short and easy route by which to bring to Europe the valuable products that had long been coming from the Indies.

The climate and products of these islands resemble those of the West Indies in many ways, although the former have



Fig. 297. — Batavia, the capital of Java

The tree in the center is a banyan tree, the drooping branches of which are supported by roots sent down to the ground by the branches.



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Fig. 298. — Mt. Cook, New Zealand

Locate this mountain on Fig. 289. What is its height? Explain the dense tree growth by reference to Fig. 292.

higher temperatures and more moisture. Fig. 292 shows how heavy the rainfall is.

In this tropical region are extensive forests containing many kinds of valuable woods. Most of the world's supply of rubber comes from this region. Unlike the rubber trees of South America, which are scattered through the forest (p. 192), those of this region are raised on huge plantations. Thus the rubber can be more easily and cheaply secured. You have probably heard of Java coffee. Tea, indigo, rice, sugar cane, tobacco, cotton, and grain are also important products. Most of the

Photo from Erwing Galloway, N. Y.

world's spices used to come from these islands; on that account they were once known as the Spice Islands. They still supply many spices. From the very earliest times, too, they have been noted for their precious stones.

So valuable have been these products that European nations have eagerly taken

possession of this region. England, as usual, has a part. Point it out (Fig. 290). This time, however, it has not obtained the lion's share. That was secured many years ago by the little country of The Netherlands. Name the large islands that are controlled, wholly or in part, by the Dutch.

IV. THE SMALLER ISLANDS OF THE PACIFIC



Fig. 299. — Workers in rubber in the East Indies

The simpler processes in the manufacture of rubber are carried on near the sources of the supply. These natives of Sumatra are drying and folding sheets of crude rubber for shipment.

In Fig. 290 you will see that there are many small islands in the Pacific. Hundreds of others are too small to be shown on the map. Many of the islands are the tops of mountains rising from the bottom of the ocean.

Others are merely coral reefs, built up through the ages by the skeletons of small sea animals. Most of them are too small

to be of great value, and little is heard of them. In addition to the Hawaiian Islands, several other islands in the Pacific belong to the United States. Give their names and locate them on Fig. 315. These islands are used mainly as coaling stations where vessels renew their supply of fuel on the voyage across the Pacific.

One of the largest islands is New Guinea, just north of Australia, which is not usually classed as one of the East Indies. Between what two nations is it divided? Fierce savages inhabit its forests, and very few Europeans live there.

Among the smaller groups are the Fiji Islands. Find these. To what country do they belong?

1. Why was Australia formerly thought to be of little value? 2. Why is most of the population in the south-eastern portion? 3. Why is grazing the principal industry of Australia? 4. What are the chief differences

Review
questions

The great
number of
islands in the
Pacific, and
their little
value

between New Zealand and Australia? 5. What are the chief islands of the East Indies? 6. What are their chief products?

1. How could you reach Australia from where you live? 2. If you were to go to an Australian city to live, would you expect to find a strange language and strange customs? Why? 3. What other countries besides Australia are especially noted for cattle and sheep? 4. Read about the trouble caused by rabbits that were imported to Australia. 5. Find out about some of the peculiar native plants and animals. 6. Find what

spices are used in cooking at your home. 7. Find out about the eucalyptus tree, which has been transplanted to California. 8. Write the life history of the rubber in a comb or an eraser.

1. Australia is in the same latitude as what part of South America? 2. Of Africa? 3. What uninhabited continent is about the size of Australia? 4. Australia is opposite what part of the world? Consult a globe. 5. What states of Australia are chiefly lowlands? 6. Which state contains many lakes? 7. What tropical island lies north of Australia? 8. Compare the distance between Australia and New Zealand with that between the United States and England.

Suggestions
for extra
work

Map ques-
tions on
Australasia

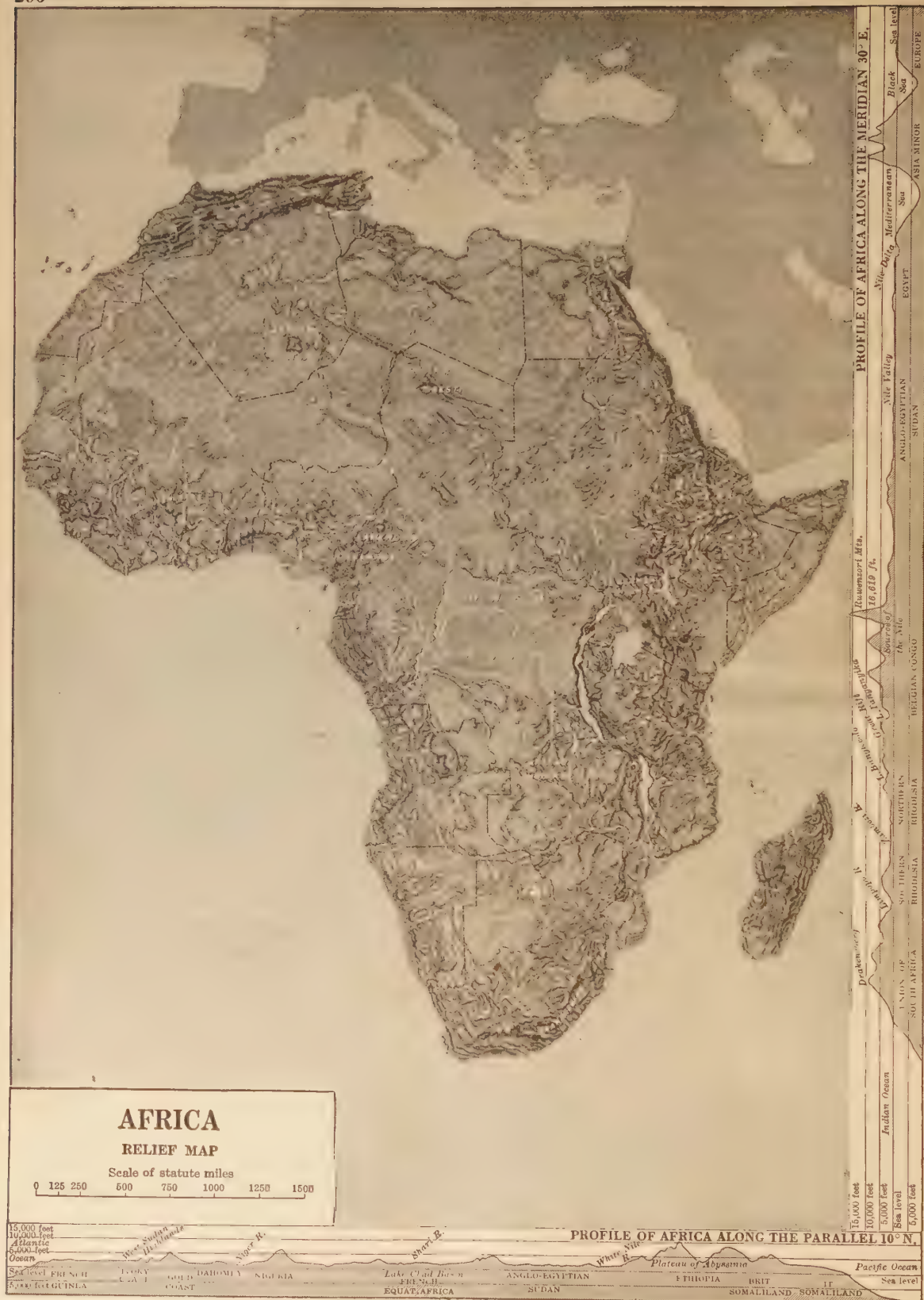


Fig. 300

PART VII. AFRICA

Probably one reason why Africa is called the "Dark Continent" is the fact that it is the home of the black man. The first negro slaves brought to North America came from that continent.

Why Africa is called the Dark Continent

Another reason is that until recently we have known little about it. It is one of the oldest continents that history tells us about, and it lies so near Europe that the two almost join at the Strait of Gibraltar; yet it is the least known of all the larger continents.

There are several reasons why so little has been known

Why so little has been known about Africa

1. How the desert has made it hard to travel

about Africa. In the first place, there is a vast desert south of the Mediterranean Sea (Fig.

302). It extends east and west across the continent from the Atlantic Ocean to the Red Sea; and from north to south it is more than 1,000 miles wide.

This vast region, most of which is a desert called the Sahara, is very difficult to cross. There are few roads or railways. The only way to cross most parts of it is with *caravans*, or groups of camels traveling together for greater safety. The watering places, or *oases*,

are usually many miles apart, so that both camels and men may perish from thirst. Frightful sandstorms sometimes arise, continuing for hours and even days; in these the sand is drifted about by the winds, filling the air and sometimes even burying the caravans. If these perils are escaped, there is still the danger of attack from the fierce nomads who live in the desert and rob the caravans.



Fig. 301. — The Great Pyramid and the Sphinx

The pyramids were built thousands of years ago for use as tombs of the royal families of Egypt. What signs do you see that this is a desert region?

It is not strange, therefore, that Europeans have failed to become well acquainted with Africa by entering it from the north.



Fig. 302



Fig. 393



Fig. 304. — Along the Nile River in Egypt

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Two of the pyramids may be seen in the distance. The palm trees are signs of what kind of climate? The camel driver is waiting for tourists, many of whom visit Egypt.

One might expect the large rivers to offer a good means of reaching the interior. Trace the Nile in Egypt (Fig. 302); the Niger and Congo on the west coast of Africa; and the Zambezi in the southeast. Notice how far these rivers extend into the continent. If they could be navigated far up toward their sources, as our Hudson and Mississippi rivers are, they would make excellent highways to the interior; but this cannot be done, for all of them have rapids and falls in their lower courses.

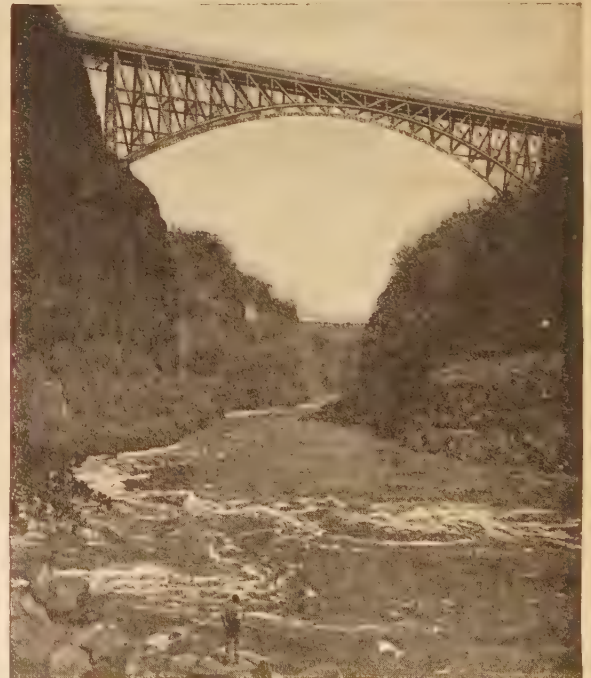
The reason for these falls is that the interior of Africa, like that of both Mexico and Spain (Figs. 58 and 247), is mainly a plateau, whose elevation is from a quarter to a half a mile above the level of the sea (Fig. 302). In descending from this plateau, the rivers tumble in cataracts and falls.

One of the largest waterfalls is Victoria Falls in the upper Zambezi River (Fig. 302). The Nile also has several rapids and cataracts; and there is a great cataract in the Congo. Thus the rivers have been of little use for exploring the continent.

A third reason why so few foreigners have visited the interior of Africa is the unhealthy climate of the tropical coast

3. The danger of the climate to foreigners

lands. Note where the equator crosses and see that most of Africa is in the tropical zone, and that only the northern and southern parts are in the temperate zones.



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Fig. 305. — Railway bridge over the Zambezi River
This picture reminds one of the Niagara River.

In this tropical region the low coast lands have too hot and damp a climate for white men. There is much malaria, as well as other diseases that thrive in a hot, damp climate. Generally, therefore, Europeans can live with comfort and safety only upon the high land of the interior. This fact has helped to keep foreigners out of Africa; for settlements in new countries are usually first made along the coast. In Africa, it is dangerous even to cross the narrow strip of coast land to reach the highlands.

A part of central Africa, where the rainfall is very heavy (Fig. 307), is covered with a dense forest like that in the Amazon Basin. This forest

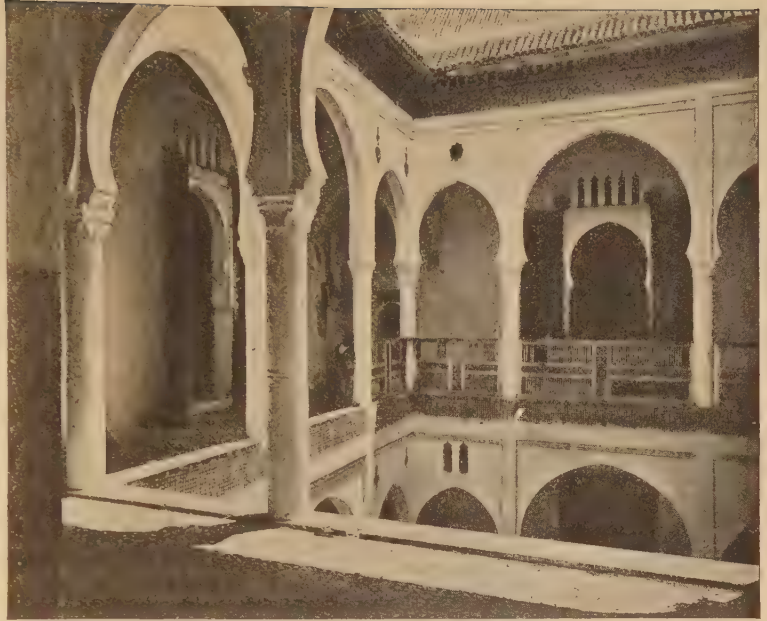
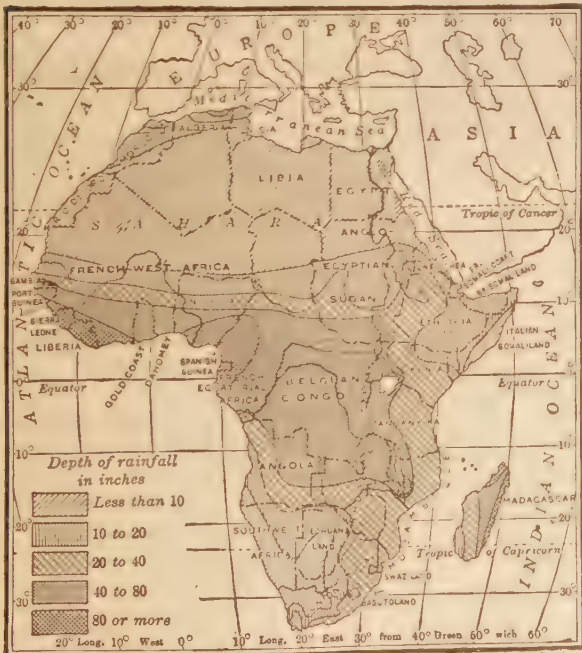


Fig. 306. — Interior of an old palace of the rulers of Morocco
This reminds one strongly of the interior of the Alhambra (Fig. 247). Both were occupied by the Moors.



Wm. Eng. Co., N. Y.

Fig. 307. — Annual rainfall in Africa

extends north and south for a full thousand miles, and is very difficult to cross.

There are many wild animals in the forest and on the open plains to the north and south of it. Among these are the lion, elephant, rhinoceros, hippopotamus, and giraffe, as well as many snakes. Some of these animals, like the lion, are very fierce and dangerous.

Another difficulty comes from the great numbers of savage black men, or negroes, many of whom are dangerous to meet. For centuries the negroes have been seized and carried away as slaves to various parts of the world. Even to-day the Arabs sometimes seize them for that purpose. Such treatment has not helped to make them friendly to white men.

If you traveled along the Mediterranean coast from Morocco to Tripoli (Fig. 303), you would see some very different

4. The effect of native life on exploration

sights from those in the European countries on the Mediterranean. These cities have a strange appearance with their white, flat-topped Moorish buildings (Fig. 306) and the domes of mosques, or churches, rising above them. You would soon find, however, that these cities are more poorly built and that there is more dirt than in the European cities on

having scarcely improved in the last 2,000 years. In the interior, on the southern slopes of the Atlas Mountains, the country becomes drier, and herding is the chief occupation. On the southern border of these countries is the Sahara. There, in some of the towns, you would see caravans starting for oases far out in the desert.

These people are so backward partly because their Mohammedan religion teaches that everything should be done as their fathers did it before them. Hence they have opposed changes. For a long time it was even dangerous for foreigners to travel here. Within recent years, however, France and Italy have taken control of these countries, and they are gradually improving conditions. At Algiers (Fig. 252), the most important seaport on this coast, the French have built an entirely modern city along the harbor below the old Moorish town. As is shown by Fig. 303, which of these countries belong to France? To Italy? To Spain? Are any of them independent?

More tourists visit Egypt than any other part of Africa, for it is one of the oldest and most interesting countries of the world. Civilized people lived there thousands of years before the time of Christ (Fig. 308). This is the country, the Bible tells us, where Moses once lived, and Joseph also. What

What one would see by traveling overland along the Mediterranean coast from Morocco to Tripoli



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Fig. 308. — The temple of Karnak, in Egypt

Modern workmen are shown here repairing this very ancient temple to keep it from further decay. Note, on the right, carving by ancient artists. The signs in the upper right-hand corner are ancient Egyptian writing.

the Mediterranean coast. In the *bazaar*, or market place, you would meet Moors, Arabs, Berbers, Hebrews, negroes, and some Europeans. Many of the people are poor and ignorant.

Much the same crops are raised along this coast as on the north shore of the Mediterranean; you would see wheat, olives, figs, dates, and other fruits. But the methods of farming are very different,

Why a trip up the Nile is enjoyable

1. Interesting sights one would see

stories from the Bible do you remember about their stay in Egypt?

Travelers usually land at Alexandria, the chief seaport of the country. In Fig. 303 note its location in the delta of the Nile River. Traveling inland across this delta, you would see a great deal of farming country. When Joseph lived there, Egypt was a storehouse for grains; and wheat, corn, and millet are still extensively raised (Fig. 309). The climate is so warm that crops like those of our Southern States can be produced, and you would see much rice, sugar cane, and especially cotton. There are many vineyards, and groves of oranges, lemons, figs, and dates. Grazing is also important; herds of water-buffalo and camels, as well as cattle, sheep, and goats, being common.

At the head of the delta is Cairo (Fig. 303), the capital of Egypt and the largest city in Africa. There you would see the palace of the Sultan, several mosques, and a museum containing many Egyptian works of art. Perhaps nowhere else in the world would you find so many races or hear so many strange languages. Three Sabbaths are observed by these different religions: Friday by the Mohammedans, Saturday by the Jews, and Sunday by the Christians.

Probably you would most enjoy taking a camel ride south of Cairo to visit some of the most interesting ruins of ancient Egypt. Here are the immense pyramids

and the Sphinx, with the head of a woman and the body of a lion (Fig. 301). With much effort you can climb step by step up the great stone blocks of which the pyramids are built. These are the tombs of ancient kings; in them have been found the bodies of the dead rulers, preserved in a peculiar way. A number of these *mummies* have been brought to museums in some of our large cities, where they may be seen by anyone.



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Fig. 309. — Grain boats on the Nile, near Cairo

There is much traffic on the lower portion of the Nile. How far from the mouth are the first rapids (Fig. 302)? How many rapids are there? The camels have come from an oasis in the desert with dates to be exchanged for some of the grain that is grown along the banks of the Nile.

This rich farming country lies in the midst of the desert and receives rain only four or five times in a year.

The fact that it is, nevertheless, so productive is due to the Nile River; indeed without the Nile Egypt itself would be a desert like the country which surrounds it. Trace the course of the Nile in Fig. 302. Its source lies near the equator in a region

2. Why this portion of the desert is prosperous



Photo from South African Railways and Harbors Publicity Dept., Johannesburg

Fig. 310. — Diamonds from the Kimberley diamond mines

of such heavy rainfall that every year floods cause the river to overflow its banks. The water, carrying a large quantity of sediment, has built up the fertile flood plains on both sides of the river and also the broad delta at its mouth. The annual floods spread over these plains, each overflow leaving a layer of rich mud, and at the same time providing the water necessary for crops. In this way, for thousands of years, millions of people have been supported in the midst of the desert.

At the opposite end of the continent from Egypt lies an

Why South Africa is so attractive to Europeans

even more prosperous region. This is the Union of South Africa,

which would probably seem less strange to you than any other part of Africa you might visit. It is a part of the British Empire, and

large numbers of Europeans, principally English and Dutch, live there. The cities are as modern as our own. Cape Town, for example, is in every way like the cities of the north temperate zone. The same is true of the cities of Australia and temperate South America. More and more every year, civilized people are living like one another the world over. This is especially true in the temperate zones. In fact, one of the reasons why so many Europeans live in South Africa is that the temperate climate there is suitable for white people.

This is a rich farming country. Besides fields of grain, you would see fruit orchards. A peculiar industry there is the raising of ostriches; you would enjoy visiting a farm where these huge birds are raised for their feathers. Fewer ostriches have been raised, however, since women ceased to trim their hats with ostrich feathers.



Photo from South African Railways and Harbors Publicity Dept., Johannesburg

Fig. 311. — The harbor at Cape Town, South Africa

Another reason why South Africa has attracted so many Europeans is its great mineral wealth. Johannesburg is the center of the gold mining. The district near it produces more than a third of the gold of the world and nearly twice the amount produced by the United States. At Kimberley is one of the greatest diamond mines in the world (Fig. 310). There you would see native workers digging out the decayed rock from old volcanoes and washing it to find the precious stones.

In the past travelers in northern Africa seldom ventured into the interior, because

almost the only way of getting there was by the long and difficult caravan route across the Sahara. Dur-

The plan of the Cape-to-Cairo Railroad

1. Why such a railroad has long been desired

ing the last fifty years, European nations have taken control of a large part of Africa. There is therefore greater need than ever before for a railroad to make travel possible through the interior and to carry products from central Africa to seaports in the north and south. One of the great plans for developing the continent is the Cape-to-Cairo Railroad (Fig. 312), which will make it possible to travel overland from one end of the continent all the way to the other. In Fig. 303 trace this route from Cairo in Egypt to Cape Town in South Africa. Estimate the distance. Note also that the greater

part of the line has already been completed by the British, through Egypt, which they used to govern, and through their colonies in central and southern Africa. What portion remains to be built? The greatness of the undertaking is shown by the fact that a journey over the completed line will be about twice as long as that between New York and San Francisco, and it is estimated that it will take about ten days to travel from one end to the other. How long does it take to cross our continent?

If you were to make the trip by this route when it is completed, you would



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Fig. 312. — The Cape-to-Cairo Railway

This is where the line crosses the Zambezi River. Compare this picture with Fig. 305.

leave the desert at some distance south of Egypt and pass into the grasslands of the Sudan. In Fig. 303 trace the boundaries of the Sudan. There rain falls during one season of the year, while the other season

2. What one might see on this route

is dry. This prevents the growth of trees except along the rivers, for they cannot live through the dry season. Grass, however, grows luxuriantly, and herding is the chief occupation of the negro inhabitants. Do you imagine these herders have as pleasant a life as the herders in Switzerland (p. 223)? Give the reason for your answer.



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Fig. 313. — A view of Zanzibar

Zanzibar is on an island of the same name and is one of the principal seaports of the eastern coast.

South of the Sudan the train would climb up into the forest-covered highlands. Although you would be traveling through the tropics, the altitude is so high that the temperature would be very comfortable, and you would see mountain peaks covered with snow.

As you crossed the plateau of Rhodesia, you would pass through grasslands much like those of the Sudan. There the cool, dry season is followed by a warm, rainy season like our spring. This climate is

very comfortable for the white man to live in, and many Dutch and English have settled here. Ranching is the principal occupation; there are large herds of cattle and sheep.

In southern Rhodesia you would cross the Zambezi River near Victoria Falls. This wonderful waterfall is even larger than Niagara, and is one of the grandest in the world.

Coming down from the highlands you would pass into South Africa. From what has been said, what would you be likely to see on the remainder of the trip?

In Fig. 302 trace the course of the Congo River, the chief highway of central Africa. Where does the equator cross it? How does its latitude compare with that of the Amazon (Fig. 170)? How does its length compare with that of the Amazon? The number of tributaries?

How a trip up the Congo would differ from one up the Amazon

From these comparisons you might expect a trip up the Congo to be much like one up the Amazon, and in many ways the two journeys would be alike. There is a strip of grassland, however, through which the Congo passes for many miles before it reaches the ocean. A little over 100 miles inland numerous falls in the river lead up to Leopoldville. From there on, traveling would be a little more comfortable; for on the plateau the temperature is somewhat lower. Although falls are frequently in the way, railroads have been built around many of them, and you could travel easily either by water or rail over most of the basin of the Congo and its tributaries.

Much of the time the way leads through forests, but the lighter rainfall on the

higher parts of the plateau makes them less dense than the Amazon jungle. The products of the Congo Basin are, therefore, more easily obtained than those of the Amazon, although they are practically the same. Recall the important products of the Amazon Basin. In addition, ivory, from the tusks of the elephant, is of great importance in the Congo. The Congo has a greater variety of animal life; elephants live in the forests and hippopotami and crocodiles in the streams; and the roar of the lion is frequently heard on the plains.

Although the tropical plateau of the Congo is too unhealthful for most white men, the natives prosper there. Along the river banks you would see many native villages, with their clusters of huts roofed with straw or some similar material. Since land is easier to clear here than in the Amazon Basin, the villages are surrounded by gardens and fields where potatoes, corn, sugar cane, cotton, and rice are grown. Only a small portion of the land is tilled at present, but nearly the entire basin, an area about equal to a third of the United States, could be cultivated. How does it compare in this respect with the Amazon Basin? With the Mississippi Basin?

1. Why has Africa been called the Dark Continent? 2. How has the desert made travel difficult? 3. Why has navigation on the rivers been difficult? 4. Why

is the climate of large parts of Africa unhealthful? 5. How have the natives hindered exploration? 6. Describe some of the sights to be seen in northwestern Africa. 7. Why does the prosperity of Egypt depend upon the Nile? 8. In what ways does South Africa remind one of our own country? 9. What are some of its chief products? 10. Why is a Cape-to-Cairo

Review
questions



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Fig. 314. — Half-civilized negroes in the Belgian Congo

railroad needed? 11. Describe some of the scenes along this route. 12. Compare the Congo and the Amazon basins.

1. How do you explain the fact that the Egyptians have made such greater advances than the other peoples of northern Africa?

2. Why should Cairo be the largest city on the continent? 3. Read the story of Joseph in the Bible beginning in *Genesis*, Chapter 37. 4. Read about the Dutch settlements in South Africa. 5. Write an account of a visit to an oasis in the Sahara. 6. Make a collection of pictures of scenes in Egypt.

Suggestions
for extra
work

7. To what European countries do the different parts of Africa belong? 8. Find out some interesting facts about the diamond mines at Kimberley.

1. Show that Africa has a more regular coast line than any other continent. 2. What two seas lie along the northern and northeastern coasts of Africa? 3. What large island lies east of Africa? Compare its area with that of one of

our states. 4. What countries of Africa consist chiefly of highlands? 5. Of lowlands? 6. Trace the courses of all rivers mentioned in the text. 7. Compare the area of Victoria Nyanza with that of Lake Michigan. 8. Compare the area of the Belgian Congo with that of the United States. 9. The northernmost cities of Africa are in about the same latitude as what city in the United States?

Map
questions
on Africa

PART VIII. THE UNITED STATES COMPARED WITH OTHER COUNTRIES

Every person is likely to think that his own country is the best in the world.

Some of our advantages

1. The home of an ordinary city family in the United States

Most of us think that the United States is the best place to live in, and there are many reasons for thinking so. Let us see what some of them are.

Robert and Margaret Johnson live in a small town in central Indiana. Their father is a foreman in one of the many factories in the town. They are by no means rich people. Yet they probably have more things to make their home comfortable and attractive than you would find in the homes of the same kind of people in any other part of the world.

As long as the children can remember, their house has had electric lights, a gas stove, running water, a bathroom, and a furnace. Most town or city people in the United States think these things are necessary.

But there are many things besides these that would not be found in a workman's home in Europe or Asia. Mrs. Johnson has an electric washing machine, an electric flatiron, an electric motor on her sewing machine, and an electric vacuum cleaner. There is also a piano and a radio set with a loud speaker. Mr. Johnson has a small automobile for running errands, making visits, and taking trips into the country on holidays.

The children have many fine things to play with. Robert has an unbreakable

wagon with steel wheels, and a scooter. Margaret has a small bicycle, ball-bearing roller skates, and a tennis racket. These are not unusual toys for children in the United States. Most of Robert and Margaret's playmates have the same kind of toys.

Last summer the children were much interested in watching an oil burner being put on the furnace in the house next door. It has an electric attachment which turns the fire on when the house gets cold and turns it off when the house gets warm. Mr. Johnson says that if this furnace works well he will buy one himself next winter. Then Mrs. Johnson will not have to shovel coal and ashes when he is at work.

Mrs. Johnson's sister has just bought an electric refrigerator and another neighbor is going to buy an ironing machine. These are only a few of the things that people in the United States are using more and more commonly. Perhaps you can name some that have not been mentioned.

Robert and Margaret have some cousins who live on a 160-acre farm in Iowa. Their names are Arthur, Olive, and Harry Franklin. What would you expect to be the principal crops on the Franklin farm (pages 96 and 152)?

2. The home of a country family

The Franklin farm has all the conveniences you read about for the Ohio farm on page 99. Besides, there is an electric milking machine for milking the



Fig. 315



Fig. 315

cows. In addition to the automobile, there is a truck and a tractor. In the house there is a radio set. It is particularly valuable to Mr. Franklin because he can listen to the reports of farm prices. How can such information be of great value to a farmer?

single one of these things except in the homes of the rich.

In England running water and bath tubs are almost as common as in our country. But even the ordinary ice-box which is so common in our country is seldom used. Most families would

never even think of having an oil-burning furnace or an electric washing machine.

In the larger cities of Europe running water in homes is common. In many of the smaller cities the pressure is not great enough to lift the water to the second floor, so bathtubs are not seen very often. In the smaller places people use water from their own wells. Sometimes a town has a single well to which all go with their buckets or barrels (Fig. 316).



Photo by P. A. Knudsen

Fig. 316. — Hauling water from a village well in Russia

Besides the assistance in the farm work for milking cows, separating cream from skim milk, cutting wood, pumping water, and many other things, the electric power plant makes housework much easier. Many of the things used in the city, such as vacuum cleaners, washing machines, flatirons, and so on may also be used in the country.

Most of us are so used to many of the things mentioned that we do not see anything remarkable in them. But you will not find such a list of conveniences in the average home in any other country in the world. In fact, in most of the countries you would seldom find a

Ice is little used on the continent of Europe. Most people buy only enough of the foods which spoil easily to last for one day. An American recently visited several electric stores in France without finding a man who had ever seen an electric refrigerator. Yet even the smallest village in the United States is likely to have an agent for all kinds of electrical household goods.

In South America a farmhouse is likely to have only an earthen floor. In many homes one will not even find a chimney. A space is left where the roof joins the walls for smoke to escape. Fly screens are quite unusual there and bathrooms, electric lights, or telephones are seldom found outside the large cities.

3. How homes in other countries compare with these



Photo by P. A. Knowlton

Fig. 317. — A country inn in England

But in spite of all these advantages we have to make living and housekeeping easy, many people think we are much behind other countries in one way. That is in the beauty of our homes. In parts of Europe many farmers are likely to have quaint little homes of remarkable beauty. Fig. 317 shows a farmer's home in England. This particular home is used also as a country inn, but it is little better than strictly private homes in the same village. Other pictures of attractive homes in Europe are found in Part IV. On what pages?

Until recently our people have paid little attention to the beauty of their homes. Houses without any attempt at beauty have been all too common. But there are signs of improvement in our taste in houses. Perhaps you can mention some

pretty new houses which have been built near you recently.

The Franklin and Johnson children have more and better food than the children in any other country are likely to have. For breakfast they have oranges, prunes, applesauce, bananas, or some other fruit. Then they have a cereal with milk and sugar, and bread or toast with butter.

4. How our food compares with that of other countries

For dinner they have a stew with meat and vegetables, or soup, meat, potatoes, vegetables (fresh in summer and canned in winter), milk, bread, butter, and for dessert pie, pudding, cake, or fruit.

For supper they are likely to have some of the things left over from dinner, with one hot dish besides.



Fig. 318. — A Middle Western farm



Photo from Underwood Press Service, London.

Fig. 319. — Saved from starving, in a land that suffers famines

But children in other lands do not fare so well either in the amount of food or in the many different kinds. An Irish child is likely to live mainly on potatoes and oatmeal porridge. In central Europe black or rye bread and sausage or bologna are the common foods. Other meat appears only once or twice a week. In Japan and China rice, millet, and fish are the main foods.

Eskimo children live almost entirely on fish and caribou or other meat (pp. 42-43). Children of the deserts (pp. 260, 296) have dried dates, cheeses from camel's or goat's milk, and meat from sheep or goats. They have very little cereal food. Perhaps you can tell why.

Hardly a year passes without a famine in some part of the world. Thousands of people die each year in parts of China and India because they do not have enough

to eat. Many others in these countries seldom have as much food as they should have (Fig. 319).

But in our country famine is unknown. Our stores are well stocked at all times of the year with vegetables, cereals, and meats. The prices of most of these foods are usually low enough so that all of our people can have not only enough food but a large variety. See how long a list you can make of the different kinds of food you have in your house during a week. Also make a list of the main kinds you see at the stores near you. See if you can tell from what part of this country or from what other country each of the foods on your list comes.

Not only do we have many more kinds of food than most other people; we have much more of the especially good foods. Fig. 320 shows how our use of sugar compares with that of other countries. From the figure, tell about how many more pounds of sugar one of us uses on the average than a German. How does our use of sugar compare with that of the average Englishman? What other facts does the figure show?

A large use of sugar means that we have more candy, cakes, ice cream, and such things than do people who use less sugar. Would you rather live in a country which uses more or less of these things?

Meat is another important food of which we use a great deal. A country which uses a great deal of meat is usually said to have a "high standard of living." This is because meat is expensive and cannot be much used in countries where the people are poor. Fig. 321 shows how our use of meat compares with that of some other countries. From the figure

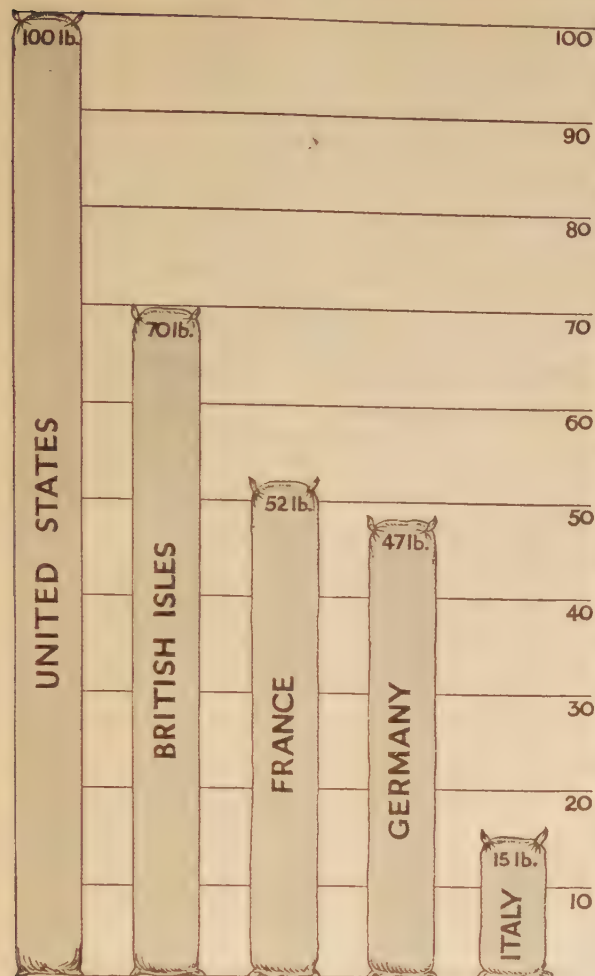


Fig. 320. — The amount of sugar used in a year by each person in several countries

The height of the bag shows the amount of sugar used.

tell how many pounds of meat the average person in the United States eats in a year. How many pounds does the average Englishman eat? How much less than our use is that? What European country mentioned in Fig. 321 uses the least meat per person? What country uses less than all the others in Fig. 321? How many times as much as an Italian does one of our people eat on the average? How many times as much as a Japanese? Tell some other things the figure shows.

Many of the things that have been said

here about the United States are just as true of Canada. The people of Canada are much like us in many ways and live much as we do.

At the beginning of 1927 there were a few more than 27 million automobiles in the world. Over 22 million, or about four fifths of them, were in the United States. But when we are comparing other countries with our own we must remember that some countries are

5. Other things that we have in great abundance

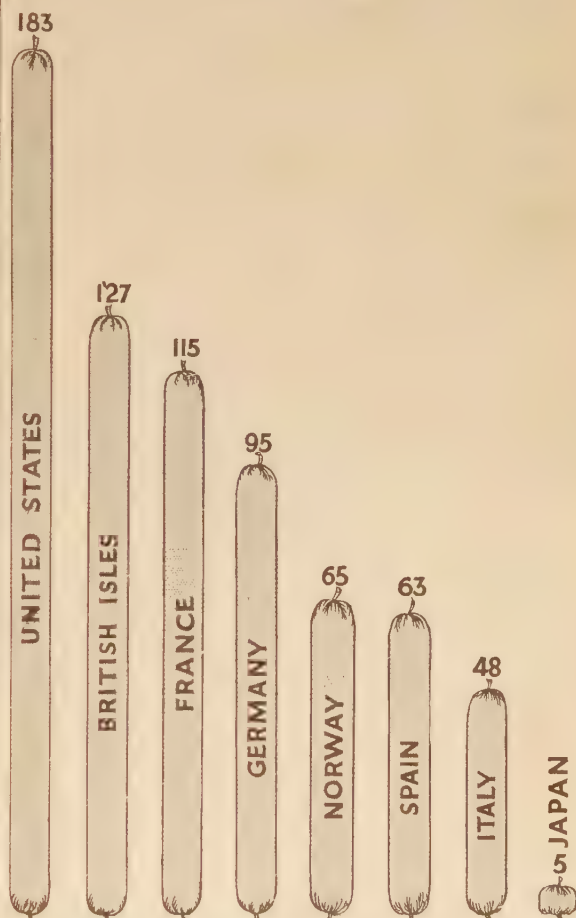


Fig. 321. — The amount of meat used in a year by each person in several countries

This is as it would look if all the various kinds of meat were made into a sausage. The length of the sausage shows the amount of meat used.

much smaller than ours. For example, the population of Chile is less than one thirtieth of ours. If they have one thirtieth as many automobiles as we have, then they are as well off as we are in that respect. Let us see.

Fig. 322 shows that if all the people of the United States wanted to go riding at the same time we could take them all and have only five people to each automobile. But if all the people of Chile wanted to go riding at once there would have to be 221 people in each automobile.

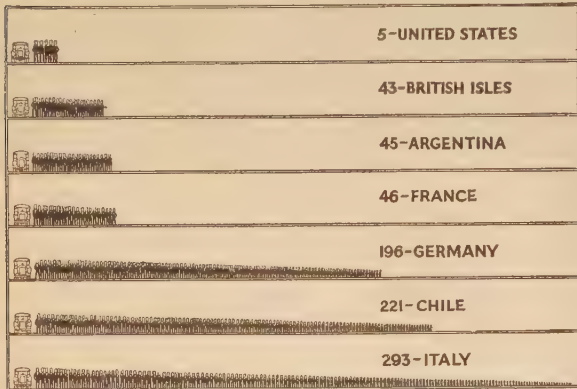


Fig. 322. — The number of persons to each automobile in several countries

About how many times as crowded would the Chileans be as we should? So you see that even when we remember that our population is much greater than that of Chile we are still better off as to automobiles.

Tell some other facts the graph shows. A graph for China would be too long to put on this page because there are over 23,000 people for each automobile in China.

Fig. 323 tells about our rank in radio sets. If we all wanted to hear the president speak at once, about eighteen of us would have to be at each radio set.

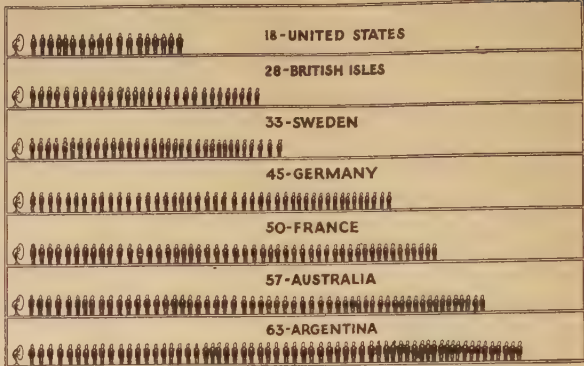


Fig. 323. — The number of persons to each radio set in several countries

But if all the British people wanted to hear their king speak at once, they would have to have 28 people at each radio set. How many people would have to be at each set if all the French wanted to hear their president speak at the same time? What other facts can you tell from the graph?

Fig. 324 is a similar graph showing the number of telephones. What does it tell you about the rank of the United States in telephones? About five eighths of all the world's telephones are in the United States. There are nearly 200 telephone messages for each of us during a year. In Germany there are only about 30 a year for each person, in the British Isles



Fig. 324. — The number of persons to each telephone in several countries

Our advantage in agriculture is not due to size and location alone. A part of it is due to the way in which our land is used. The average size of a farm in the United

Occupation	Percentage of Population
POPULATION	12.5%
SUGAR	12.5%
RUBBER	37.5%
TELEPHONES	37.5%
RAILROAD TRACK	25%
PETROLEUM	37.5%
AUTOMOBILES	37.5%
COFFEE	37.5%
RAW SILK	37.5%

Examine the pictures on pages 97, 100,

and 130. Then compare them with what you see on pages 239 and 250. Which kind of farming would you expect to give greater profit to the farmer? What do the pictures on pages 105 and 277 tell you about farming methods in the two countries in which they were taken?

Read the description of threshing in the second column on page 238. Compare such methods with our use of a harvesting machine that cuts the grain, threshes it, and puts it into bags as it moves along, and does the work of fifteen men.

In the United States the average farm worker takes care of nearly thirty acres of crops. In France and Germany one farm worker cares for only seven acres, in Russia only nine, and in Japan only one and a half. In fact, each American farmer and farm worker, on the average, is feeding nine people besides himself in this country and one more person in a foreign land.

Of course farm machinery is used in other countries too. But no other country uses so much of it as we do. Some countries produce more crops for each acre of farm land than we do, but no other produces so much for each farm worker.

Another reason for our wealth lies in our ability to feed ourselves. With the exception of sugar, we raise all we need of every necessary food. A country which does not produce enough food for its own people has to buy food from other countries. It must usually pay a high price for this imported food. Try to tell why. On this account countries which can produce all their own food and enough more besides to sell some food to others are likely to become wealthy.

The British Isles must buy great quantities of food from other countries (p. 203). Of what kinds of food? Name some of the countries you would expect to supply the British Isles with these foods. From what part of our country do we get our own supplies of some of these foods? Which kinds of foods that the British Isles import do we also have to buy from other countries? What countries supply us with the foods which we do not produce? Which of these foods could we get along without if we had to?

France produces much the same kinds of food that we do (p. 211), but not enough of some of the important ones for its own needs. It must buy millions of bushels of wheat and a great deal of meat each year from other countries. Germany, Italy, Belgium, The Netherlands, and Denmark are other countries which import wheat and meat.

What other foods does Germany have to buy from other countries (pp. 216-217)? Which of these foods can we supply? Are there any which we do not produce?

What do the British Isles send in exchange for the food they buy from us (pp. 204-206)? How does Germany pay us for the food it buys from us (p. 217)?

Most of our workmen are able to buy more things than workmen in almost any other country in the world because they earn more. Fig. 326 shows how earnings of workmen in one kind of factory in different countries compare. From the graph, about how much does one of our workmen earn? How much more does he earn than an English workman? How much more than a German work-

2. How our manufacturing compares with that of other countries

man? What other facts can you tell from the graph?

Probably the main reason why our workmen earn so much more than other workmen is the fact that they have more machinery to help them. The average



Fig. 326. — The daily average earnings of workmen in the same kind of factory in several different countries

Each coin represents twenty-five cents, or the value of twenty-five cents in foreign money. Wages in this graph are reckoned only to the nearest quarter of a dollar.

workman in the United States has machinery of the power of four horses to help him. If he worked in England, he would have only two horsepower, and if he were a workman in Japan he would have only one horsepower.

When a man has machinery to help him, he can do more work and therefore earn more money. The man who runs a concrete-mixing machine can mix more concrete and so earn more money than he could if he had to do the work with a shovel. The man who runs a steam shovel can earn many times as much as a man in the old-fashioned pick and shovel gang. Perhaps you have seen one of the large machines which digs a trench for water or sewer

pipes. The man who runs such a machine earns from \$15 to \$20 a day, while a shoveler will seldom earn more than \$5.

Our people are noted for their use of machinery. Not only do we have a great amount of machinery, but our machines are wonderful in the things they do. For example, we can unload an ore boat without the use of a hand shovel (pp. 85 and 90). At some of our seaports a whole railroad car full of coal can be lifted up and turned upside down to dump the coal into a boat (Fig. 327). Much of our coal is now mined with the help of machines (p. 76).

We have machines into one end of which a man feeds a steel rod. At the other end finished screws with perfect threads and slots already cut in the heads are collected into boxes. There are other machines which make glass bottles all in one operation. An especially interesting machine fills and solders the tops on cans of fruit and vegetables. Bread is wrapped in waxed paper by machinery. In many



Photo from Ewing Galloway, N. Y.

Fig. 327. — Unloading a car of coal

of our food factories the food is not touched by hand from the beginning to the end of the process. Adding machines are becoming quite common, and now we even have a machine which will work the hardest kind of problems in arithmetic!

Of course other countries use machinery too, but hardly any other country makes so much use of it as we do. For example, in our newer textile factories a single workman will frequently tend 20 to 30 looms. In Europe a single workman seldom tends more than six looms and it is said that in India one frequently sees a workman with a boy to help him run a single loom!

On the average a soft coal miner in the United States gets out about four and one half tons of coal each working day. In England and Germany each miner averages only about one ton and in France only five eighths of a ton each working day.

As a result of such a great use of machinery and of having such skilled workmen, we produce a very large part of the world's goods. See Fig. 328. Notice that while we have only one sixteenth of the world's population we produce three fifths of the world's copper. We produce nearly five eighths of the world's pig iron and about the same part of its steel. We produce over half the world's cotton and one fourth of its wheat. The fact that we produce half the world's electric power shows the extent to which our people use electric lights and electric machinery.

Since we produce such a large part of the world's goods, we have many things to sell to other countries. Fig. 329

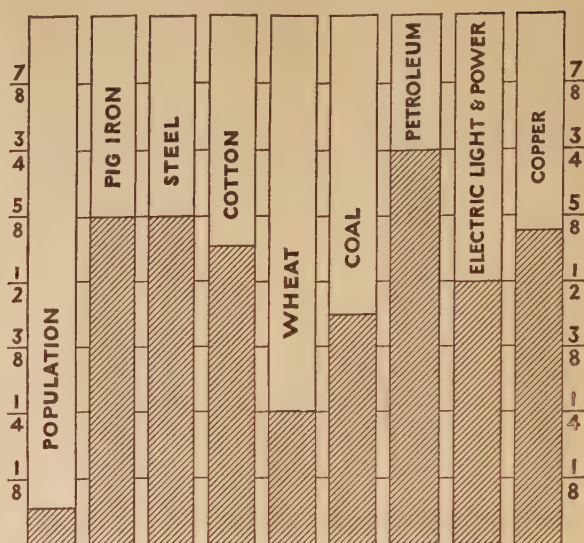


Fig. 328. — The fraction of the world's total of several things that we produce

The first bar shows our part of the world's total population.

shows some facts about a few of the more important ones. From the graph, you see that we send nearly half of our cotton to other continents. About how much of our wheat do we export? About how much of our pork? What other things does Fig. 329 tell you?

So you see we produce a great many things and have a large supply left over to sell to others. How do these two facts show one reason why people can buy so many things for comfortable living?

Another great advantage our people have is in our very large supplies of raw materials. Let us see if you can name some of the more important ones. What is the principal metal found near the western end of Lake Superior? What one is found in large quantities in Arizona, Utah, Montana, and Michigan? What minerals are found in Pennsylvania? What very important one is

3. The raw materials here and in other countries

found in southern California, Oklahoma, and Texas? What ones are found in Alabama? What others can you mention? Tell what part of the country each comes from.

Of what mineral does France have too small a supply for its needs (p. 213)? Copper is very important in modern manufacturing. Did you see any mention of it on page 205 or 206? What did you learn on page 246 about the minerals that Italy needs but does not have? How have Spain and Portugal failed to make the most of their supplies of minerals (p. 238)?

In spite of our enormous supplies of most of the very common minerals like coal, iron, and copper, there are some others of which we have almost none. Potash and nitrates, important materials for making fertilizer, are two of these. We depend upon Germany and Chile for our main supplies of these very necessary minerals.

We lack several other minerals of which we use very little compared with iron, but which are absolutely necessary to certain kinds of manufacturing. You have probably never heard of some of these; but our steel industry, for example, would have difficulty in getting along if we could not import *manganese*.

Nickel is another material which is needed in making certain very hard steels. We get nearly all our supply from Canada. Why is it fortunate for us that Canada has large mineral deposits (p. 159)? Tin, asbestos, and platinum are other minerals which we must buy from foreign countries.

Of course we have more than we need of many other things, so we can easily

make trades for the things we lack. There is one trouble, however. What may happen if we have war with the country which has the main supply of some mineral we need? Even when we are not at war, some other war may interfere with our trade with the country. For example, in 1914, 1915, and 1916, before we entered the World War, Germany was so surrounded by its enemies that our supply of potash was seriously interfered with. On this account our farmers had to pay very high prices for their fertilizers. How does this fact show the importance not only of keeping out of war ourselves, but of trying to keep others out of war also?

The size and location of our country, our methods of working, and our supplies of minerals have been of great importance in making us wealthy. But there are still other reasons for our success. One reason is that compared with the area of our country we have a small popula-

4. Other reasons for our greater prosperity

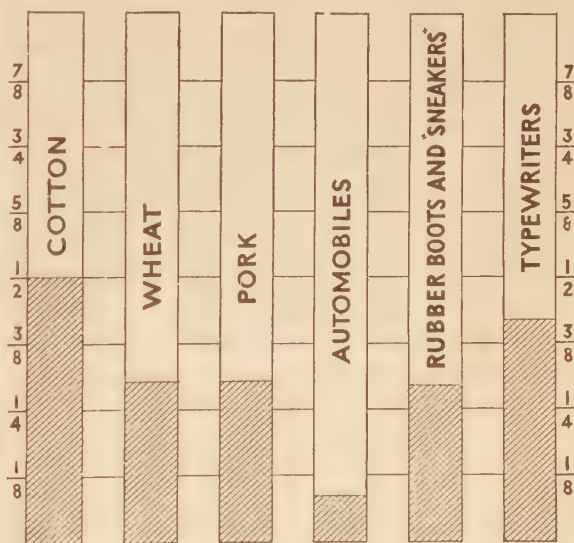


Fig. 329.—The fraction of our total production of several things which we send to other countries

tion. The area of the United States is about three quarters that of Europe, but the population of Europe is over four times ours. The area of India is little more than one half ours, but its population is nearly three times ours. (See the Appendix.)

Where there is such a dense population, the land must be made to produce a large amount per acre to feed the people. On this account more fertilizer and more labor must be used. This is especially true in an old country where the land is likely to become worn out (pp. 6-7).

Suppose one farmer raises 30 acres of wheat and receives 15 bushels to the acre, or 450 bushels in all. Suppose another farmer raises 50 bushels to the acre but has to work so hard to do it that he is able to care for only one acre. Which farmer do you think will be better off? Why? Which of these kinds of farming do most of our farmers do?

You might ask why countries like Russia, China, and India have not become wealthy. They are large countries like our own and can produce as great a variety of farm products as we can. Probably the main reason for their failure to become wealthy lies in the lack of education of their people. About three quarters of the Russians over ten years old and over nine tenths of the people of India cannot read or write. How do these facts help to explain the poverty of these countries?

Another reason for our prosperity is our freedom from a class or caste system (pp. 266-267). One of our strongest beliefs is that one man has just as much right to become successful as any other man.

How far one of us will rise in life depends mainly upon himself. It is part of our law that everyone shall have equal opportunity for advancement. We have no "ruling class" from which our government officials must be chosen. Any native-born American whom we choose to elect President may have the position without regard to who his relatives are or what his work is.

Consequently our people work harder, because they know that there is no limit to the position and prosperity any person may reach. A man may start with a small piece of land and little else. If he is honest and successful we shall all respect him and may elect him to an important position.

So far in this chapter you have usually been comparing the United States with the more important countries of the world. But there are many millions of people in the more backward countries who are very important to us even now and who may some day become much more important.

Our dependence, in spite of these advantages, on some of the backward countries

As you have seen, our trade with Europe is one of the reasons for our prosperity. But we might get along without most of the things we now buy from Europe. On the other hand, if our supplies of goods from the hot countries were cut off we should suffer very quickly. For example, several years ago when the East Indies (p. 287) threatened to cut down their exports of rubber, the price of our automobile tires nearly doubled in a few weeks.

What people or countries can you name in the hot regions of the world (Fig. 315)? Where do we get our main

supplies of the following goods: coffee (pp. 189, 262, 287); rubber (pp. 191, 267, 288); hemp and Manila hemp (pp. 147, 170); sugar (pp. 147, 170, 172); bananas (pp. 168, 172); dates (pp. 262, 297); cocoa (pp. 172, 182)?

From this important list you see that the hot countries are very necessary to us. But in many of them the people are poor and have little education. Notice the pictures on pages 41, 148, 166, 180, 182, 262, 301. As time passes and these people become more prosperous and better educated, they will be still more important to us. As their wealth and ways of living improve, they will buy more and more of our manufactured goods. How will that benefit us?

What people or countries can you name in the cold regions of the world (Fig. 315)? Furs are about the only thing from these regions that we use at present. But our Government has been experimenting with reindeer in Alaska. What would such animals find to eat in the very cold countries (p. 43)? Some of our people think that we may get a large supply of our meat from the Far North.

Besides the hot and the cold regions, some of the other parts of the earth which are now little used may become very important to us. What can you say about the population in Australia (p. 283)? Northwestern China is also thinly settled, and there is a great deal of room in Argentina. What can you tell about their climates (pp. 186-187, 271-272, 284)? Tell what we have done with our semi-arid lands (pp. 125, 127, 132, 140). Much the same possibilities may be open to northwestern China, Australia, and Argentina. Indeed, we are already getting

half the wool we use from Australia and Argentina.

In addition, these countries may find valuable mineral deposits which will greatly increase their importance. If they develop and become well populated with prosperous people, how may it benefit us?

Thus you see that the size and location of our country and our ways of farming and manufacturing are reasons for our prosperity. Our vast supply of raw materials is another reason for it.

Suggestions
about these
matters for
boys and girls

Our large area per person, our education, and our freedom have also been of importance in our progress.

Boys and girls should not boast too much about our many advantages. They should remember that in many ways we are still dependent upon foreign countries.

We should not be jealous when another country becomes prosperous. A prosperous country is probably producing something that we want and can also buy some of our products. We always like to have nice people live on the same street with us. That is why we take an interest in our neighbors and help them along whenever we can. In the same way and for the same reasons we must be friendly with other nations.

But although we must be careful not to be so proud of ourselves that others laugh at us, we should understand the reasons for our prosperity. We should take an interest in electing wise and honest public officials. We should take great interest in all talk about new laws which may affect our freedom and our right to our own profits. We must be

careful that no selfish group is allowed to get control of our water power or our coal or any other of our resources.

And one especially important thing is for us to see that our Government does

all it can to keep out of war and to keep others out of war. Boys and girls can help a great deal in such matters by talking about them among themselves and at home.

APPENDIX

TABLES OF AREA, POPULATION, ETC.

THE EARTH

Land area (square miles).....	56,255,000	Length of axis (miles).....	7,900
Water area (square miles).....	140,295,000	Length of the equator (miles).....	24,900

CONTINENTS AND MOST IMPORTANT COUNTRIES

TABLE I. AREA OF THE CONTINENTS

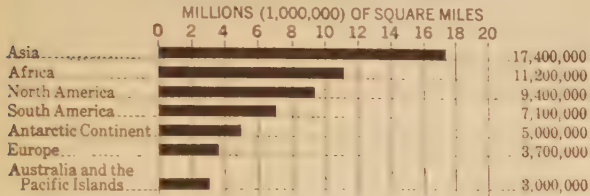


TABLE II. POPULATION OF THE CONTINENTS

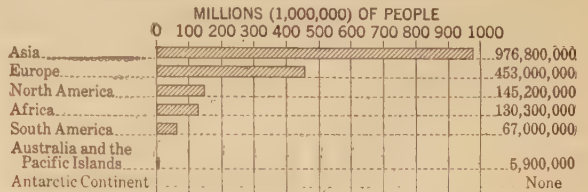


TABLE III. AREA OF THE COUNTRIES OF NORTH AMERICA

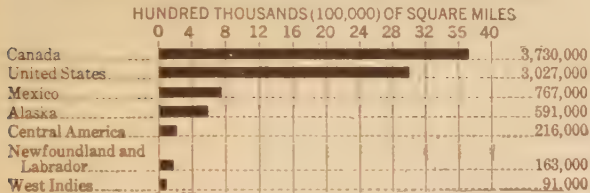


TABLE IV. POPULATION OF THE COUNTRIES OF NORTH AMERICA

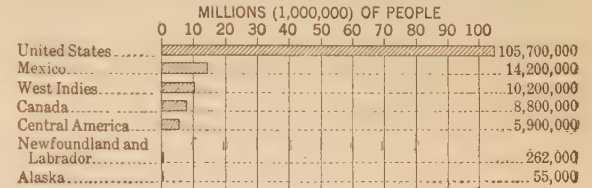


TABLE V. AREA OF THE CHIEF COUNTRIES OF SOUTH AMERICA

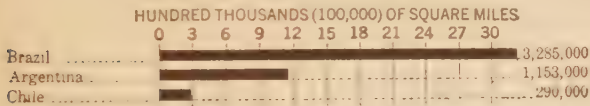


TABLE VI. POPULATION OF THE CHIEF COUNTRIES OF SOUTH AMERICA

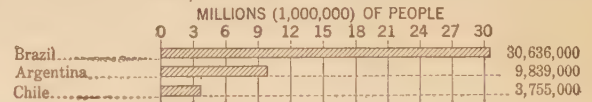


TABLE VII. AREA OF THE CHIEF COUNTRIES OF EUROPE

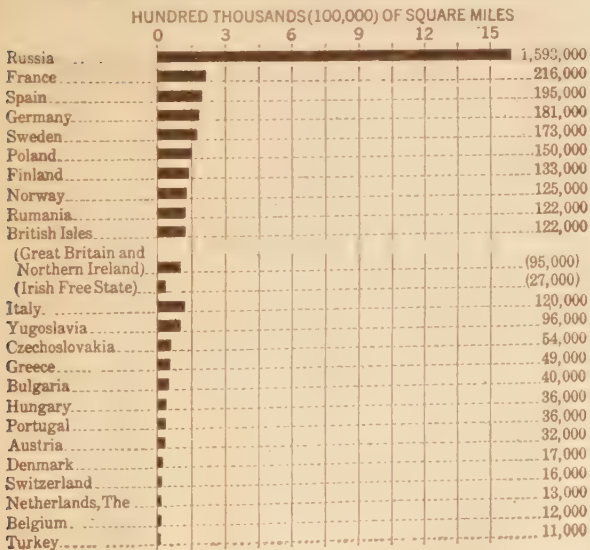


TABLE VIII. POPULATION OF THE CHIEF COUNTRIES OF EUROPE

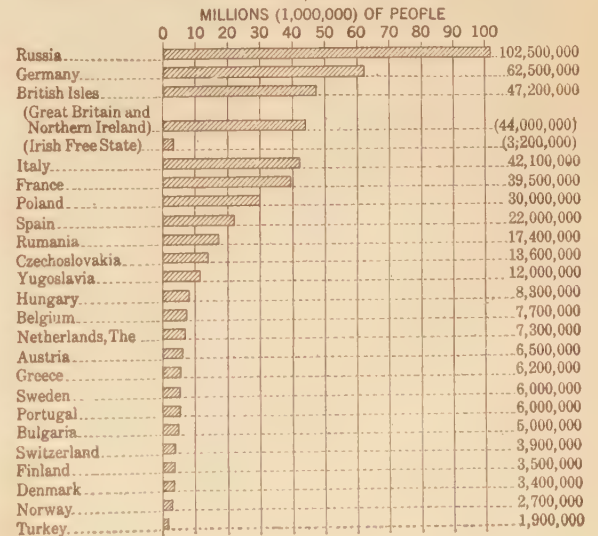


TABLE IX. AREA OF THE CHIEF COUNTRIES OF ASIA

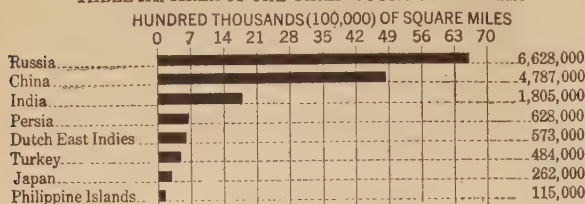


TABLE X. POPULATION OF THE CHIEF COUNTRIES OF ASIA

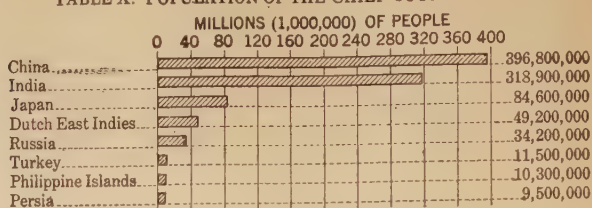


TABLE XI. AREA OF AUSTRALIA AND THE PACIFIC ISLANDS

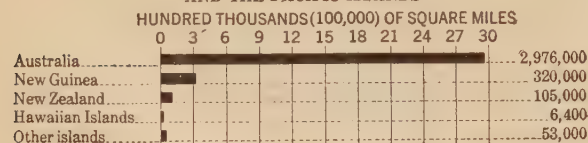


TABLE XII. POPULATION OF AUSTRALIA AND THE PACIFIC ISLANDS

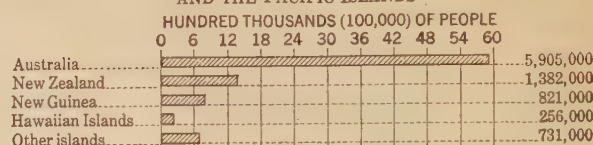


TABLE XIII. AREA OF THE CHIEF DIVISIONS OF AFRICA

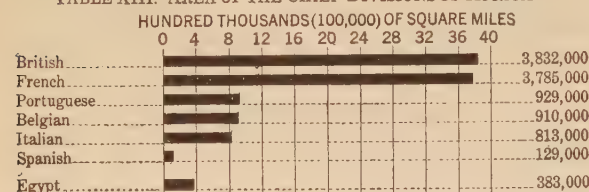


TABLE XIV. POPULATION OF THE CHIEF DIVISIONS OF AFRICA

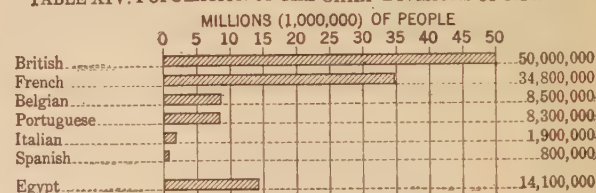
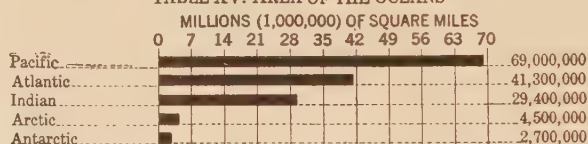


TABLE XV. AREA OF THE OCEANS



AREAS AND POPULATIONS OF OTHER COUNTRIES NOT SHOWN IN THE GRAPHS

North America			Area in Square Miles			Population		
Canada			Area in Square Miles			Population		
Alberta	255,300	588,000	Virgin Islands of the U. S.			132	26,000	
British Columbia	355,900	525,000	South America					
Manitoba	251,800	610,000	Bolivia	514,200	2,990,000			
New Brunswick	28,000	388,000	British Guiana	89,500	301,000			
Nova Scotia	21,400	524,000	Colombia	440,800	6,618,000			
Ontario	407,300	2,934,000	Ecuador	119,000	2,000,000			
Prince Edward Island	2,200	89,000	French Guiana	34,700	44,000			
Quebec	706,800	2,361,000	Paraguay	98,000	1,000,000			
Saskatchewan	251,700	758,000	Peru	532,000	5,550,000			
Yukon Territory	207,100	4,000	Surinam (Dutch Guiana)	54,300	136,000			
Northwest Territories	1,242,200	8,000	Uruguay	72,200	1,640,000			
Central America			Venezuela	393,900	2,412,000			
British Honduras	8,600	45,000	Europe					
Costa Rica	23,000	507,000	Albania	17,400	832,000			
Guatemala	42,400	2,005,000	Estonia	18,400	1,111,000			
Honduras	46,300	673,000	Great Britain					
Nicaragua	49,200	638,000	England	50,900	35,681,000			
Panama (exclusive of the Canal Zone)	32,400	442,000	Wales	7,500	2,206,000			
Panama Canal Zone	554	27,000	Scotland	30,400	4,882,000			
Salvador	13,200	1,580,000	Northern Ireland	6,100	1,279,000			
Greenland	827,300	14,000	Latvia	25,000	1,845,000			
West Indies			Lithuania	30,000	2,450,000			
Bahama Islands	4,400	53,000	Russian Soviet Federation					
Cuba	44,200	3,369,000	Russia proper	862,700	54,904,000			
Dominican Republic	19,300	897,000	N. Caucasian Region	111,200	7,175,000			
Haiti	10,200	2,300,000	Ukraine	174,000	25,808,000			
Jamaica	4,400	858,000	White Russia	42,800	4,455,000			
Lesser Antilles	4,900	1,350,000	Crimea	9,900	626,000			
Porto Rico	3,435	1,347,000	Asia					
			Afghanistan	245,000	12,000,000			
			Arabian Peninsula	1,000,000	7,000,000			
			Ceylon	25,300	4,505,000			
			Chinese Republic					
			China proper	1,534,400	375,000,000			
			Manchuria	364,000	17,812,000			
			Mongolia	1,875,000	750,000			
			Sinkiang	550,300	1,200,000			
			Tibet	463,200	2,000,000			
			Dutch East Indies					
			Borneo (Dutch)	206,800	1,626,000			
			Celebes	72,700	3,108,000			
			Java	50,700	34,984,000			
			New Guinea					
			British	159,000	626,000			
			Dutch	160,700	195,000			
			Indo-China					
			Federated Malay States	27,600	1,418,000			
			French Indo-China	257,100	19,844,000			
			Non-federated Malay States					
			Siam	200,100	9,724,000			
			Straits Settlements	1,600	961,000			
			Iraq (Mesopotamia)	143,300	2,849,000			
			Japanese Empire					
			Japan proper	148,800	59,936,000			
			Chosen (Korea)	85,200	19,520,000			
			Sakhalin	13,900	169,000			
			Taiwan (Formosa)	13,900	3,976,000			
			Kwantung	500	979,000			
			Palestine	9,000	757,000			
			Russian Soviet Federation					
			Ural Region	675,700	6,312,000			
			Siberia	1,671,100	7,626,000			
			Altai	49,100	1,597,000			
			Irkutsk	326,000	750,000			
			Yenisei	158,800	1,131,000			

	Area in Square Miles	Population
Far East.....	984,100	1,594,000
Amur.....	158,300	392,000
Kamchatka.....	485,100	32,000
Kirgisias.....	1,173,400	6,163,000
Yakutias.....	1,455,000	520,000
Kara-Kirgisias.....	91,100	793,000
Transcaucasia.....	72,000	5,053,000
Uzbekistan.....	140,700	4,750,000

	Area in Square Miles	Population
Turkmenistan...	176,000	850,000
Syria.....	60,000	3,000,000
Africa		
<i>Independent Countries</i>		
Ethiopia.....		
(Abyssinia)...	350,000	10,000,000
Liberia.....	43,000	2,000,000

	Area in Square Miles	Population
Australia		
Federal Territory..	940	3,000
Northern Territory..	523,600	23,000
New South Wales...	310,400	2,257,000
Queensland.....	670,500	855,000
South Australia...	380,100	543,000
Tasmania.....	26,200	214,000
Victoria.....	87,900	1,657,000
Western Australia..	975,900	353,000

TWENTY-FIVE LARGEST CITIES IN THE WORLD

	Population 1920
1. New York, U. S.....	5,620,000
2. London, England.....	4,485,000
3. Berlin, Germany.....	3,931,000
4. Paris, France.....	2,906,000
5. Chicago, U. S.....	2,702,000
6. Buenos Aires, Argentina.....	2,310,000
7. Tokyo, Japan.....	2,036,300
8. Moscow, Russia.....	2,000,000
9. Vienna, Austria.....	1,866,000

	Population 1920
10. Philadelphia, U. S.....	1,824,000
11. Hankow, China.....	1,627,000
12. Shanghai, China.....	1,500,000
13. Calcutta, India.....	1,323,000
14. Peking (Peiping), China.....	1,300,000
15. Osaka, Japan.....	1,253,000
16. Budapest, Hungary.....	1,185,000
17. Bombay, India.....	1,176,000

	Population 1920
18. Leningrad, Russia.....	1,164,000
19. Rio de Janeiro, Brazil.....	1,158,000
20. Glasgow, Scotland.....	1,057,000
21. Hamburg, Germany.....	1,054,000
22. Sydney, Australia.....	1,012,000
23. Warsaw, Poland.....	1,000,000
24. Detroit, U. S.....	994,000
25. Birmingham, England.....	919,000

UNITED STATES AND POSSESSIONS

State	Area in Square Miles	Population 1920
Alabama.....	52,000	2,348,000
Arizona.....	114,000	334,000
Arkansas.....	53,300	1,752,000
California.....	158,300	3,427,000
Colorado.....	103,900	940,000
Connecticut.....	5,000	1,381,000
Delaware.....	2,400	223,000
District of Columbia.....	70	438,000
Florida.....	58,700	968,000
Georgia.....	59,300	2,896,000
Idaho.....	83,900	432,000
Illinois.....	56,700	6,485,000
Indiana.....	36,400	2,930,000
Iowa.....	56,100	2,404,000
Kansas.....	82,200	1,769,000
Kentucky.....	40,600	2,417,000
Louisiana.....	48,500	1,799,000
Maine.....	33,000	768,000
Maryland.....	12,300	1,450,000
Massachusetts.....	8,300	3,852,000
Michigan.....	58,000	3,668,000
Minnesota.....	84,700	2,387,000

State	Area in Square Miles	Population 1920
Mississippi.....	46,900	1,791,000
Missouri.....	69,400	3,404,000
Montana.....	147,000	549,000
Nebraska.....	77,500	1,296,000
Nevada.....	110,700	77,000
New Hampshire.....	9,300	443,000
New Jersey.....	8,200	3,156,000
New Mexico.....	122,600	360,000
New York.....	49,200	10,385,000
North Carolina.....	52,400	2,559,000
North Dakota.....	70,800	647,000
Ohio.....	41,000	5,759,000
Oklahoma.....	70,000	2,028,000
Oregon.....	96,700	783,000
Pennsylvania.....	45,100	8,720,000
Rhode Island.....	1,250	604,000
South Carolina.....	31,000	1,684,000
South Dakota.....	77,600	637,000
Tennessee.....	42,000	2,338,000
Texas.....	265,900	4,663,000
Utah.....	85,000	449,000
Vermont.....	9,600	352,000

State	Area in Square Miles	Population 1920
Virginia.....	42,600	2,309,000
Washington.....	69,100	1,357,000
West Virginia.....	24,200	1,464,000
Wisconsin.....	56,100	2,632,000
Wyoming.....	97,900	194,000
United States (continental)....	3,027,000	105,711,000
<i>Territories and Depen-</i>		
<i>dencies</i>		
Alaska.....	590,900	55,000
American Samoa..	77	8,000
Guam.....	210	16,000
Hawaii.....	6,449	256,000
Military and naval service abroad....		117,000
Panama Canal Zone.....	554	27,000
Philippine Islands..	115,000	10,314,000
Porto Rico.....	3,435	1,347,000
Virgin Islands of U. S.....	132	26,000
United States (total) ..	3,743,757	117,877,000

TWENTY-FIVE LARGEST CITIES IN THE UNITED STATES

	Population 1920
1. New York.....	5,620,000
2. Chicago, Ill.....	2,702,000
3. Philadelphia, Pa.....	1,824,000
4. Detroit, Mich.....	994,000
5. Cleveland, Ohio.....	797,000
6. St. Louis, Mo.....	773,000
7. Boston, Mass.....	748,000
8. Baltimore, Md.....	734,000
9. Pittsburgh, Pa.....	588,000

	Population 1920
10. Los Angeles, Cal.....	577,000
11. Buffalo, N. Y.....	507,000
12. San Francisco, Cal.....	507,000
13. Milwaukee, Wis.....	457,000
14. Washington, D. C.....	438,000
15. Newark, N. J.....	415,000
16. Cincinnati, Ohio.....	401,000
17. New Orleans, La.....	387,000
18. Minneapolis, Minn.....	381,000

	Population 1920
10. Kansas City, Mo.....	324,000
20. Seattle, Wash.....	315,000
21. Indianapolis, Ind.....	314,000
22. Jersey City, N. J.....	298,000
23. Rochester, N. Y.....	296,000
24. Portland, Ore.....	258,000
25. Denver, Colo.....	256,000

CITIES OF THE UNITED STATES HAVING A POPULATION OF 25,000 OR OVER, INCLUDING THE CAPITAL AND LARGEST CITY OF EACH STATE

	Population 1920
Akron, Ohio.....	208,000
Alameda, Cal.....	29,000
Albany, N. Y.....	113,000
Albuquerque, N. M.....	15,000
Allentown, Pa.....	74,000
Altoona, Pa.....	60,000
Amsterdam, N. Y.....	34,000
Anderson, Ind.....	30,000
Annapolis, Md.....	11,000
Asheville, N. C.....	29,000
Atlanta, Ga.....	201,000
Atlantic City, N. J.....	51,000
Auburn, N. Y.....	36,000
Augusta, Ga.....	53,000
Augusta, Me.....	14,000
Aurora, Ill.....	36,000
Austin, Tex.....	35,000
Baltimore, Md.....	734,000
Bangor, Me.....	26,000
Baton Rouge, La.....	22,000
Battle Creek, Mich.....	36,000
Bay City, Mich.....	48,000
Bayonne, N. J.....	77,000
Beaumont, Tex.....	40,000

	Population 1920
Bellingham, Wash.....	26,000
Berkeley, Cal.....	56,000
Bethlehem, Pa.....	50,000
Binghamton, N. Y.....	67,000
Birmingham, Ala.....	178,000
Bismarck, N. D.....	7,000
Bloomington, Ill.....	29,000
Boise, Idaho.....	21,000
Boston, Mass.....	748,000
Bridgeport, Conn.....	144,000
Brookline, Mass.....	66,000
Buffalo, N. Y.....	507,000
Burlington, Vt.....	23,000
Butte, Mont.....	42,000
Cambridge, Mass.....	110,000
Camden, N. J.....	116,000
Canton, Ohio.....	87,000
Carson City, Nev.....	2,000
Cedar Rapids, Iowa.....	46,000
Charleston, S. C.....	68,000
Charleston, W. Va.....	40,000
Charlotte, N. C.....	46,000
Chattanooga, Tenn.....	58,000

	Population 1920
Chelsea, Mass.....	43,000
Chester, Pa.....	58,000
Cheyenne, Wyo.....	14,000
Chicago, Ill.....	2,702,000
Chicopee, Mass.....	36,000
Cicero, Ill.....	45,000
Cincinnati, Ohio.....	401,000
Clarksburg, W. Va.....	28,000
Cleveland, Ohio.....	797,000
Clifton, N. J.....	26,000
Colorado Springs, Colo.....	30,000
Columbia, S. C.....	38,000
Columbus, Ga.....	31,000
Columbus, Ohio.....	237,000
Concord, N. H.....	22,000
Council Bluffs, Iowa.....	36,000
Covington, Ky.....	57,000
Cranston, R. I.....	29,000
Cumberland, Md.....	30,000
Dallas, Tex.....	159,000
Danville, Ill.....	34,000
Davenport, Iowa.....	57,000
Dayton, Ohio.....	153,000
Decatur, Ill.....	44,000

Population		Population		Population	
1920		1920		1920	
Denver, Colo.	256,000	Lowell, Mass.	113,000	Racine, Wis.	59,000
Des Moines, Iowa	126,000	Lynchburg, Va.	30,000	Raleigh, N. C.	27,000
Detroit, Mich.	994,000	Lynn, Mass.	99,000	Reading, Pa.	108,000
Dover, Del.	4,000	McKeesport, Pa.	47,000	Reno, Nev.	12,000
Dubuque, Iowa	39,000	Macon, Ga.	53,000	Revere, Mass.	29,000
Duluth, Minn.	99,000	Madison, Wis.	38,000	Richmond, Ind.	27,000
East Chicago, Ind.	36,000	Malden, Mass.	49,000	Richmond, Va.	172,000
East Cleveland, Ohio	27,000	Manchester, N. H.	78,000	Roanoke, Va.	51,000
Easton, Pa.	34,000	Manila, P. I.	285,000	Rochester, N. Y.	296,000
East Orange, N. J.	51,000	Mansfield, Ohio	28,000	Rockford, Ill.	66,000
East St. Louis, Ill.	67,000	Marion, Ohio	28,000	Rock Island, Ill.	35,000
Elgin, Ill.	27,000	Medford, Mass.	39,000	Rome, N. Y.	26,000
Elizabeth, N. J.	96,000	Memphis, Tenn.	162,000	Sacramento, Cal.	66,000
Elmira, N. Y.	45,000	Meriden, Conn.	30,000	Saginaw, Mich.	62,000
El Paso, Tex.	78,000	Meridian, Miss.	23,000	St. Joseph, Mo.	78,000
Erie, Pa.	93,000	Miami, Fla.	30,000	St. Louis, Mo.	773,000
Evanston, Ill.	37,000	Milwaukee, Wis.	457,000	St. Paul, Minn.	235,000
Evansville, Ind.	85,000	Minneapolis, Minn.	381,000	St. Thomas, V. I.	8,000
Everett, Mass.	40,000	Mobile, Ala.	61,000	Salem, Mass.	43,000
Everett, Wash.	28,000	Moline, Ill.	31,000	Salem, Ore.	18,000
Fall River, Mass.	120,000	Montclair, N. J.	29,000	Salt Lake City, Utah	118,000
Fargo, N. D.	22,000	Montgomery, Ala.	43,000	San Antonio, Tex.	161,000
Fitchburg, Mass.	41,000	Montpelier, Vt.	7,000	San Diego, Cal.	75,000
Flint, Mich.	92,000	Mount Vernon, N. Y.	43,000	San Francisco, Cal.	507,000
Fort Smith, Ark.	29,000	Muncie, Ind.	37,000	San José, Cal.	40,000
Fort Wayne, Ind.	87,000	Muskegon, Mich.	37,000	San Juan, P. R.	71,000
Fort Worth, Tex.	106,000	Muskogee, Okla.	30,000	Santa Fé, N. M.	7,000
Frankfort, Ky.	10,000	Nashua, N. H.	28,000	Savannah, Ga.	83,000
Fresno, Cal.	45,000	Nashville, Tenn.	118,000	Schenectady, N. Y.	89,000
Galveston, Tex.	44,000	Newark, N. J.	415,000	Scranton, Pa.	138,000
Gary, Ind.	55,000	Newark, Ohio	27,000	Seattle, Wash.	315,000
Grand Rapids, Mich.	138,000	New Bedford, Mass.	121,000	Sheboygan, Wis.	31,000
Green Bay, Wis.	31,000	New Britain, Conn.	59,000	Shreveport, La.	44,000
Hagerstown, Md.	28,000	New Brunswick, N. J.	33,000	Sioux City, Iowa	71,000
Hamilton, Ohio	40,000	Newburgh, N. Y.	30,000	Sioux Falls, S. D.	25,000
Hammond, Ind.	36,000	New Castle, Pa.	45,000	Somerville, Mass.	93,000
Hamtramck, Mich.	49,000	New Haven, Conn.	163,000	South Bend, Ind.	71,000
Harrisburg, Pa.	76,000	New London, Conn.	26,000	Spokane, Wash.	104,000
Hartford, Conn.	138,000	New Orleans, La.	387,000	Springfield, Ill.	59,000
Haverhill, Mass.	54,000	Newport, Ky.	29,000	Springfield, Mass.	130,000
Hazleton, Pa.	32,000	Newport, R. I.	30,000	Springfield, Mo.	40,000
Helena, Mont.	12,000	Newport News, Va.	36,000	Springfield, Ohio	61,000
Highland Park, Mich.	46,000	New Rochelle, N. Y.	36,000	Stamford, Conn.	35,000
Hoboken, N. J.	68,000	Newton, Mass.	46,000	Steubenville, Ohio	29,000
Holyoke, Mass.	60,000	New York, N. Y.	5,620,000	Stockton, Cal.	40,000
Honolulu, Hawaii	83,000	Niagara Falls, N. Y.	51,000	Superior, Wis.	40,000
Houston, Tex.	138,000	Norfolk, Va.	116,000	Syracuse, N. Y.	172,000
Huntington, W. Va.	50,000	Norristown, Pa.	32,000	Tacoma, Wash.	97,000
Indianapolis, Ind.	314,000	Norwalk, Conn.	28,000	Tallahassee, Fla.	6,000
Irrvington, N. J.	25,000	Oakland, Cal.	216,000	Tampa, Fla.	52,000
Jackson, Mich.	48,000	Oak Park, Ill.	40,000	Taunton, Mass.	37,000
Jackson, Miss.	23,000	Ogden, Utah	33,000	Terre Haute, Ind.	66,000
Jacksonville, Fla.	92,000	Oklahoma City, Okla.	1,000	Toledo, Ohio	243,000
Jamestown, N. Y.	14,000	Olympia, Wash.	98,000	Topeka, Kan.	50,000
Jefferson City, Mo.	29,000	Omaha, Neb.	192,000	Trenton, N. J.	119,000
Jersey City, N. J.	148,000	Orange, N. J.	33,000	Troy, N. Y.	72,000
Johnstown, Pa.	67,000	Oshkosh, Wis.	33,000	Tulsa, Okla.	72,000
Joliet, Ill.	38,000	Pasadena, Cal.	45,000	Utica, N. Y.	94,000
Joplin, Mo.	30,000	Passaic, N. J.	64,000	Waco, Tex.	39,000
Juneau, Alaska	3,000	Patterson, N. J.	136,000	Waltham, Mass.	31,000
Kalamazoo, Mich.	49,000	Pawtucket, R. I.	64,000	Warren, Ohio	27,000
Kansas City, Kan.	101,000	Pensacola, Fla.	31,000	Washington, D. C.	438,000
Kansas City, Mo.	324,000	Peoria, Ill.	76,000	Waterbury, Conn.	92,000
Kearny, N. J.	27,000	Perth Amboy, N. J.	42,000	Waterloo, Iowa	36,000
Kenosha, Wis.	40,000	Petersburg, Va.	31,000	Watertown, N. Y.	31,000
Kingston, N. Y.	27,000	Philadelphia, Pa.	1,824,000	West Hoboken, N. J.	40,000
Knoxville, Tenn.	78,000	Phoenix, Ariz.	29,000	West New York, N. J.	30,000
Kokomo, Ind.	30,000	Pierre, S. D.	3,000	Wheeling, W. Va.	56,000
La Crosse, Wis.	30,000	Pittsburgh, Pa.	588,000	Wichita, Kan.	72,000
Lakewood, Ohio	42,000	Pittsfield, Mass.	42,000	Wichita Falls, Tex.	40,000
Lancaster, Pa.	53,000	Plainfield, N. J.	28,000	Wilkes-Barre, Pa.	74,000
Lansing, Mich.	57,000	Pontiac, Mich.	34,000	Williamsport, Pa.	36,000
Lawrence, Mass.	94,000	Port Huron, Mich.	26,000	Wilmington, Del.	110,000
Lewiston, Me.	32,000	Portland, Me.	69,000	Wilmington, N. C.	33,000
Lexington, Ky.	42,000	Portland, Ore.	258,000	Winston-Salem, N. C.	48,000
Lima, Ohio	41,000	Portsmouth, Ohio	33,000	Woonsocket, R. I.	43,000
Lincoln, Neb.	55,000	Portsmouth, Va.	54,000	Worcester, Mass.	180,000
Little Rock, Ark.	65,000	Poughkeepsie, N. Y.	35,000	Yonkers, N. Y.	100,000
Long Beach, Cal.	56,000	Providence, R. I.	238,000	York, Pa.	48,000
Lorain, Ohio	37,000	Pueblo, Colo.	43,000	Youngstown, Ohio	132,000
Los Angeles, Cal.	577,000	Quincy, Ill.	36,000	Zanesville, Ohio	30,000
Louisville, Ky.	235,000	Quincy, Mass.	48,000		

FOREIGN CITIES HAVING A POPULATION OF 250,000 OR MORE

Population		Population		Population	
Adelaide, South Australia		Baku, Azerbaijan		Bradford, England	
290,000		250,000		286,000	
Ahmedabad, India		Bangkok, Siam		Bremen, Germany	
274,000		746,000		290,000	
Alexandria, Egypt		Barcelona, Spain		Breslau, Germany	
445,000		738,000		553,000	
Amoy, China		Batavia, Java		Bristol, England	
300,000		254,000		377,000	
Amsterdam, The Netherlands		Belfast, Northern Ireland		Brussels, Belgium	
712,000		434,000		794,000	
Antwerp, Belgium		Berlin, Germany		Bucharest, Rumania	
302,000		3,931,000		309,000	
Athens, Greece		Birmingham, England		Budapest, Hungary	
385,000		919,000		1,185,000	
Baghdad, Mesopotamia		Bombay, India		Buenos Aires, Argentina	
250,000		1,176,000		2,310,000	
Bahia (Sao Salvador), Brazil		Bordeaux, France		Cairo, Egypt	
283,000		267,000		791,000	

Population		Population		Population	
Calcutta, India.....	1,328,000	Kief, Ukraine.....	404,000	Oslo, Norway.....	258,000
Canton, China.....	900,000	Kobe, Japan.....	609,000	Palermo, Sicily.....	405,000
Catania, Italy.....	258,000	Königsberg, Germany.....	275,000	Para.....	275,000
Changchow.....	500,000	Kyoto, Japan.....	591,000	Paris, France.....	2,906,000
Changsha, China.....	536,000	Lahore, India.....	282,000	Peking (Peiping), China.....	1,300,000
Changteh.....	300,000	Leeds, England.....	458,000	Prague (Praha), Czechoslovakia..	677,000
Chemnitz, Germany.....	323,000	Leipzig, Germany.....	680,000	Rangoon, Burma.....	342,000
Chengtu.....	450,000	Lemberg (Lwow), Poland.....	250,000	Riga, Latvia.....	338,000
Chungking, China.....	593,000	Leningrad, Russia.....	1,164,000	Rio de Janeiro, Brazil.....	1,158,000
Cologne, Germany.....	693,000	Lisbon, Portugal.....	486,000	Rome, Italy.....	747,000
Constantinople, Turkey.....	881,000	Liverpool, England.....	803,000	Rosario, Argentina.....	265,000
Copenhagen, Denmark.....	586,000	Lodz, Poland.....	500,000	Rotterdam, The Netherlands.....	544,000
Delhi, India.....	304,000	London, England.....	4,485,000	Saloniki, Greece.....	263,000
Dortmund, Germany.....	320,000	Lyon, France.....	562,000	Santiago, Chile.....	507,000
Dresden, Germany.....	608,000	Madras, India.....	527,000	Sao Paulo, Brazil.....	579,000
Dublin, Irish Free State.....	438,000	Madrid, Spain.....	783,000	Seoul, Chosen.....	297,000
Duisburg, Germany.....	272,000	Magdeburg, Germany.....	287,000	Shanghai, China.....	1,500,000
Düsseldorf, Germany.....	429,000	Manchester, England.....	730,000	Sheffield, England.....	491,000
Edinburgh, Scotland.....	427,000	Marseille, France.....	586,000	Singapore, Straits Settlements.....	350,000
Essen, Germany.....	466,000	Melbourne, Australia.....	886,000	Soochow, China.....	500,000
Florence, Italy.....	261,000	Mexico City, Mexico.....	633,000	Stettin, Germany.....	251,000
Foochow, China.....	315,000	Milan, Italy.....	853,000	Stockholm, Sweden.....	439,000
Frankfort, Germany.....	458,000	Montevideo, Uruguay.....	422,000	Stuttgart, Germany.....	337,000
Genoa, Italy.....	323,000	Montreal, Canada.....	908,000	Sydney, Australia.....	1,012,000
Glasgow, Scotland.....	1,057,000	Moscow, Russia.....	2,000,000	Teheran, Persia.....	350,000
Hague, The, The Netherlands.....	394,000	Mozambique, Mozambique.....	333,000	Tientsin, China.....	800,000
Hamburg, Germany.....	1,054,000	Munich, Germany.....	672,000	Tiflis, Georgia.....	347,000
Hankow, China.....	340,000	Nagoya, Japan.....	430,000	Tokyo, Japan.....	2,036,000
Hanover, Germany.....	414,000	Nanking, China.....	396,000	Toronto, Canada.....	522,000
Havana, Cuba.....	539,000	Naples, Italy.....	784,000	Tsingtao, China.....	273,000
Hong Kong (Victoria), China.....	429,000	Newcastle, England.....	275,000	Turin, Italy.....	508,000
Hull, England.....	287,000	Ningpo, China.....	284,000	Valencia, Spain.....	260,000
Hyderabad, India.....	494,000	Nottingham, England.....	263,000	Vienna, Austria.....	1,866,000
Johannesburg, Union of S. Africa.....	288,000	Nuremberg, Germany.....	384,000	Warsaw, Poland.....	1,000,000
Kharkof, Ukraine.....	250,000	Odessa, Ukraine.....	317,000	West Ham, England.....	301,000
		Osaka, Japan.....	1,253,000	Yokohama, Japan.....	423,000

ELEVATION OF SOME PLATEAUS AND MOUNTAIN PEAKS

Feet		Feet		Feet	
Abyssinian Plateau.....	5,000-7,000	Fujiyama, Japan.....	12,365	Pikes Peak, Rocky Mountains, Colorado.....	14,110
Aconcagua, Andes, Argentina (highest in South America).....	22,860	Kanchanjanga, Himalayas, Nepal.....	28,225	Popocatepetl, Mexico.....	17,888
Apo, Mindanao, Philippines.....	10,311	Kenia, Africa.....	18,373	Rainier (Tacoma) Cascade Range, Washington.....	14,408
Ararat, Armenia.....	16,910	Kilimanjaro, Africa (highest in Africa).....	19,710	St. Elias, Alaska.....	18,000
Mt. Blanc, Alps, France (highest in Alps).....	15,782	Kosciusko, Australia.....	7,308	San Francisco Mountain, Arizona.....	12,611
Bolivian Plateau.....	10,000-13,000	Lassen, Sierra Nevada, California.....	10,465	Shasta, Cascade Range, California.....	14,161
Brazilian Highlands.....	2,000-2,500	Logan, Coast Range, Canada (highest in Canada).....	19,850	Tibet Plateau.....	10,000-15,000
Chimborazo, Andes, Ecuador.....	20,498	McKinley, Alaska (highest in North America).....	20,300	United States, Western Plateau.....	4,000-6,000
Cotopaxi, Andes, Ecuador.....	19,613	Mauna Kea, Hawaiian Islands.....	13,825	Vesuvius, Italy.....	4,360
Elbruz, Caucasus, Russia (highest in Europe).....	18,525	Mauna Loa, Hawaiian Islands.....	13,675	Washington, White Mountains, N. H. (highest in northeastern U. S.).....	6,293
Etna, Sicily.....	10,755	Mexican Plateau.....	5,000-6,000	Whitney, Sierra Nevada, California (highest in continental U. S.).....	14,501
Everest, Himalayas, Nepal (highest in the world).....	29,002	Mitchell, Appalachian Highland, N. C. (highest in eastern U. S.).....	6,711		
		Orizaba, Mexico (highest in Mexico).....	18,701		

SOME OF THE LARGEST RIVERS OF THE WORLD

Length in Miles Basin Area in Sq. Miles Ocean				Length in Miles Basin Area in Sq. Miles Ocean				Length in Miles Basin Area in Sq. Miles Ocean			
North America				Europe				Africa			
Arkansas.....	2,200	186,000	Atlantic	Danube.....	1,800	300,000	Atlantic	Congo.....	2,900	1,200,000	Atlantic
Colorado.....	2,000	225,000	Pacific	Deiuper.....	1,200	242,000	Atlantic	Niger.....	2,600	563,000	Atlantic
Columbia.....	1,400	217,000	Pacific	Dwina.....	1,000	140,000	Arctic	Nile.....	3,400	1,273,000	Atlantic
Mackenzie.....	2,000	590,000	Arctic	Rhine.....	800	75,000	Atlantic	Zambezi.....	1,500	600,000	Indian
Missouri.....	3,000	527,000	Atlantic	Rhone.....	500	38,000	Atlantic				
Missouri-Mississippi.....	4,300	1,257,000	Atlantic	Seine.....	500	30,000	Atlantic				
Ohio.....	1,000	202,000	Atlantic	Volga.....	2,400	563,000	Caspian				
Rio Grande.....	1,800	240,000	Atlantic					Australia			
St. Lawrence.....	2,200	530,000	Atlantic	Amur.....	2,800	520,000	Pacific	Darling.....	1,100	200,000	Indian
Yukon.....	2,000	440,000	Pacific	Brahmaputra.....	1,800	425,000	Indian	Murray.....	1,000	270,000	Indian
				Ganges.....	1,500	440,000	Indian				
				Hwang.....	2,700	570,000	Pacific				
				Indus.....	1,800	373,000	Indian				
				Irrawaddy.....	1,500	158,000	Indian				

SOME OF THE LARGEST LAKES OF THE WORLD

Area in Sq. Miles Elevation in Feet Greatest Depth in Feet				Area in Sq. Miles Elevation in Feet Greatest Depth in Feet				Area in Sq. Miles Elevation in Feet Greatest Depth in Feet			
Aral Sea.....	26,900	160	225	Great Salt Lake.....	2,360	4,218	30-50	Nyasa.....	14,000	1,500	600+
Baikal.....	12,500	1,312	4,550	Great Slave Lake.....	10,100		over 650	Ontario.....	7,104	246	738
Caspian Sea.....	169,000	-85'	2,400	Huron.....	22,200	580	750	Superior.....	31,829	603	1,008
Dead Sea.....	370	-1,310'	1,330	Manitoba.....	1,850	810		Tanganyika.....	12,650	2,800	2,100
Erie.....	9,990	573	210	Michigan.....	22,300	551	870	Victoria Nyanza.....	36,800	4,000	590+
Great Bear Lake.....	11,200	200		Nicaragua.....	3,600	110	83	Winnipeg.....	9,400	710	70

1Below sea level.

INDEX AND PRONOUNCING VOCABULARY

KEY TO PRONUNCIATION

(WEBSTER'S NEW INTERNATIONAL DICTIONARY)

ā, as in *āle*; ă, as in *sen'âte*; â, as in *câre*; ä, as in *äm*; å, as in *fi'nål*; ä, as in *ärm*; å, as in *åsk*; ä, as in *so'fä*; ch (=tsh), as in *chair*; ē, as in *ēve*; ê, as in *ê-vent'*; ë, as in *ënd*; ě, as in *re'čent*; ē, as in *fern*; f, for ph, as in *philosophy*; g (hard), as in *go*; gz (sonant), for x, as in *ex-ist'*; hw, for wh, as in *what*; ĩ, as in *ice*; ĩ, as in *ill*; ĵ (= dzh), for g, as in *gem*; k, for ch, as in *chorus*; ks (surd), for x, as in *vex*; kw, for qu, as in *queen*; n (ordinary sound), as in *no*; ŋ (like ng), for n before the sound of k or hard g, as in *bank*; N, representing simply the nasal tone of the preceding vowel, as in *ensemble* (ân'sân'bl'); ng, as in *long*; ò, as in *old*; ô, as in *ô-bey'*; ô, as in *ôrb*; ô, as in *ôdd*; ô, as in *côn-nect'*; ô, as in *soft*; oi, as in *oil*; oo, as in *food*; oo, as in *foot*; ou, as in *out*; s (sharp), as in *so*; sh, for ch, as in *machine*; t, for ed, as in *baked*; ū, as in *use*; ū, as in *û-nite'*; ū, as in *ûrn*; ũ, as in *tip*; ũ, as in *cir'cûs*; ũ, as in *mê-nû'*; z (like s sonant), as in *zone*; zh (=sh made sonant), for z, as in *azure*; ' (for voice glide), as in *pardon* (pâr'd'n).

The primary accent is indicated by a short, heavy mark ('), the secondary by a lighter mark (^).

The numbers refer to pages. The numbers of the pages on which the chief reference is to be found are indicated by heavier type.

The letter (i) after a page number means that an illustration or picture is referred to. The letter (m) after a page number means that a map is referred to.

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